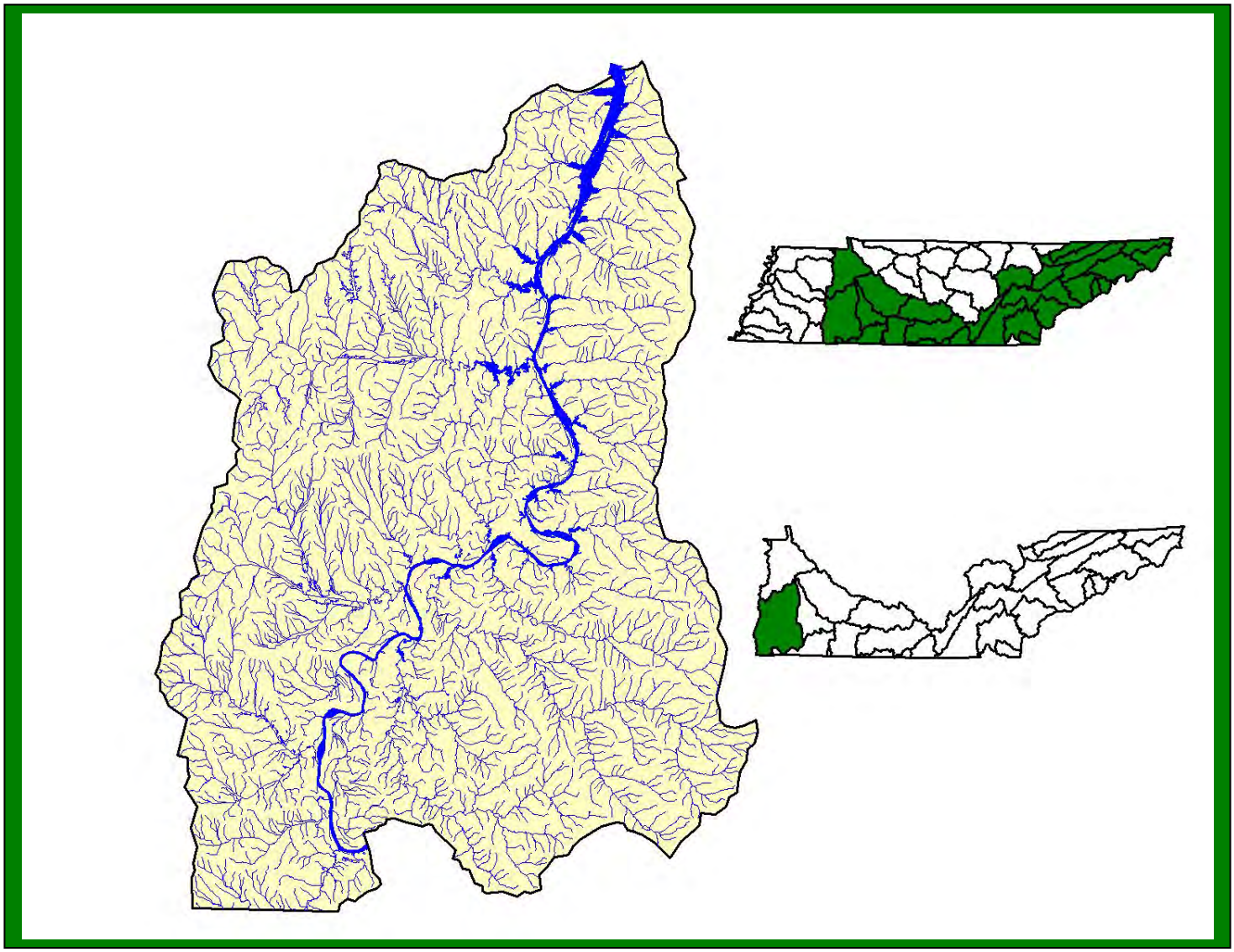
TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED (06040001) OF THE TENNESSEE RIVER BASIN 2005 WATERSHED WATER QUALITY MANAGEMENT PLAN



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
WATERSHED MANAGEMENT SECTION

TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED WATER QUALITY MANAGEMENT PLAN

TABLE OF CONTENTS

GLOSSARY

1Q20. The lowest average 1 consecutive days flow with average recurrence frequency of once every 20 years.

30Q2. The lowest average 3 consecutive days flow with average recurrence frequency of once every 2 years.

7Q10. The lowest average 7 consecutive days flow with average recurrence frequency of once every 10 years.

303(d). The section of the federal Clean Water Act that requires a listing by states, territories, and authorized tribes of impaired waters, which do not meet the water quality standards that states, territories, and authorized tribes have set for them, even after point sources of pollution have installed the minimum required levels of pollution control technology.

305(b). The section of the federal Clean Water Act that requires EPA to assemble and submit a report to Congress on the condition of all water bodies across the Country as determined by a biennial collection of data and other information by States and Tribes.

AFO. Animal Feeding Operation.

Ambient Sites. Those sites established for long term instream monitoring of water quality.

ARAP. Aquatic Resource Alteration Permit.

Assessment. The result of an analysis of how well streams meet the water quality criteria assigned to them.

Bankfull Discharge. The momentary maximum peak flow before a stream overflows its banks onto a floodplain.

Basin. An area that drains several smaller watersheds to a common point. Most watersheds in Tennessee are part of the Cumberland, Mississippi, or Tennessee Basin (The Conasauga River and Barren River Watersheds are the exceptions).

Benthic. Bottom dwelling.

Biorecon. A qualitative multihabitat assessment of benthic macroinvertebrates that allows rapid screening of a large number of sites. A Biorecon is one tool used to recognize stream impairment as judged by species richness measures, emphasizing the presence or absence of indicator organisms without regard to relative abundance.

BMP. An engineered structure or management activity, or combination of these, that eliminates or reduces an adverse environmental effect of a pollutant.

BOD. Biochemical Oxygen Demand. A measure of the amount of oxygen consumed in the biological processes that break down organic and inorganic matter.

CAFO. Concentrated Animal Feeding Operation.

Designated Uses. The part of Water Quality Standards that describes the uses of surface waters assigned by the Water Quality Control Board. All streams in Tennessee are designated for Recreation, Fish and Aquatic Life, Irrigation, and Livestock Watering and Wildlife. Additional designated uses for some, but not all, waters are Drinking Water Supply, Industrial Water Supply, and Navigation.

DMR. Discharge Monitoring Report. A report that must be submitted periodically to the Division of Water Pollution Control by NPDES permitees.

DO. Dissolved oxygen.

EPA. Environmental Protection Agency. The EPA Region 4 web site is http://www.epa.gov/region4/

Field Parameter. Determinations of water quality measurements and values made in the field using a kit or probe. Common field parameters include pH, DO, temperature, conductivity, and flow.

Fluvial Geomorphology. The physical characteristics of moving water and adjoining landforms, and the processes by which each affects the other.

HUC-8. The 8-digit Hydrologic Unit Code corresponding to one of 54 watersheds in Tennessee.

HUC-10. The 10-digit NRCS Hydrologic Unit Code. HUC-10 corresponds to a smaller land area than HUC-8.

HUC-12. The 12-digit NRCS Hydrologic Unit Code. HUC-12 corresponds to a smaller land area than HUC-10.

MRLC. Multi-Resolution Land Classification.

MS4. Municipal Separate Storm Sewer System.

Nonpoint Source (NPS). Sources of water pollution without a single point of origin. Nonpoint sources of pollution are generally associated with surface runoff, which may carry sediment, chemicals, nutrients, pathogens, and toxic materials into receiving waterbodies. Section 319 of the Clean Water Act of 1987 requires all states to assess the impact of nonpoint source pollution on the waters of the state and to develop a program to abate this impact.

NPDES. National Pollutant Discharge Elimination System. Section 402 of the Clean Water Act of 1987 requires dischargers to waters of the U.S. to obtain NPDES permits.

NRCS. Natural Resources Conservation Service. NRCS is part of the federal Department of Agriculture. The NRCS home page is http://www.nrcs.usda.gov

Point Source. Any discernable, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture (Clean Water Act Section 502(14)).

Q Design. The average daily flow that a treatment plant or other facility is designed to accommodate.

Reference Stream (Reference Site). A stream (site) judged to be least impacted. Data from reference streams are used for comparisons with similar streams.

SBR. Sequential Batch Reactor.

Stakeholder. Any person or organization affected by the water quality or by any watershed management activity within a watershed.

STATSGO. State Soil Geographic Database. STATSGO is compiled and maintained by the Natural Resources Conservation Service.

STORET. The EPA repository for water quality data that is used by state environmental agencies, EPA and other federal agencies, universities, and private citizens. STORET (Storage and Retrieval of National Water Quality Data System) data can be accessed at http://www.epa.gov/storet/

TDA. Tennessee Department of Agriculture. The TDA web address is http://www.state.tn.us/agriculture

TDEC. Tennessee Department of Environment and Conservation. The TDEC web address is http://www.tdec.net

TMDL. Total Maximum Daily Load. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of the amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation includes a margin of safety to ensure that the waterbody can be used for the purposes the State has designated. The calculation must also account for seasonal variation in water quality. A TMDL is required for each pollutant in an impaired stream as described in Section 303 of the Federal Clean Water Act of 1987. Updates and information on Tennessee's TMDLs can be found at http://www.tdec.net/wpc/tmdl/

TMSP. Tennessee Multi-Sector Permit.

USGS. United States Geological Survey. USGS is part of the federal Department of the Interior. The USGS home page is http://www.usgs.gov/.

WAS. Waste Activated Sludge.

Water Quality Standards. A triad of designated uses, water quality criteria, and antidegradation statement. Water Quality Standards are established by Tennessee and approved by EPA.

Watershed. A geographic area which drains to a common outlet, such as a point on a larger stream, lake, underlying aquifer, estuary, wetland, or ocean.

WET. Whole Effluent Toxicity.

WWTP. Waste Water Treatment Plant

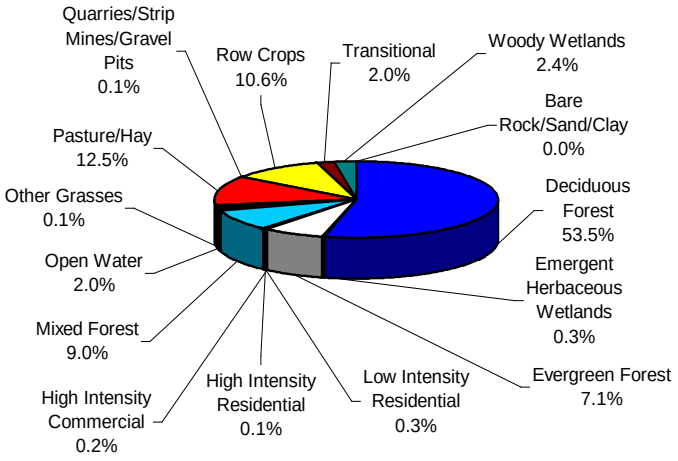
Summary – Tennessee Western Valley (Beech River)

In 1996, the Tennessee Department of Environment and Conservation Division of Water Pollution Control adopted a watershed approach to water quality. This approach is based on the idea that many water quality problems, like the accumulation of point and nonpoint pollutants, are best addressed at the watershed level. Focusing on the whole watershed helps reach the best balance among efforts to control point sources of pollution and polluted runoff as well as protect drinking water sources and sensitive natural resources such as wetlands. Tennessee has chosen to use the USGS 8-digit Hydrologic Unit Code (HUC-8) as the organizing unit.

The Watershed Approach recognizes awareness that restoring and maintaining our waters requires crossing traditional barriers (point *vs.* nonpoint sources of pollution) when designing solutions. These solutions increasingly rely on participation by both public and private sectors, where citizens, elected officials, and technical personnel all have opportunities to participate. The Watershed Approach provides the framework for a watershed-based and community-based approach to address water quality problems.

Chapter 1 of the Tennessee Western Valley (Beech River) Watershed Water Quality Management Plan discusses the Watershed Approach and emphasizes that the Watershed Approach is not a regulatory program or an EPA mandate; rather it is a decision-making process that reflects a common strategy for information collection and analysis as well as a common understanding of the roles, priorities, and responsibilities of all stakeholders within a watershed. Traditional activities like permitting, planning and monitoring are also coordinated in the Watershed Approach.

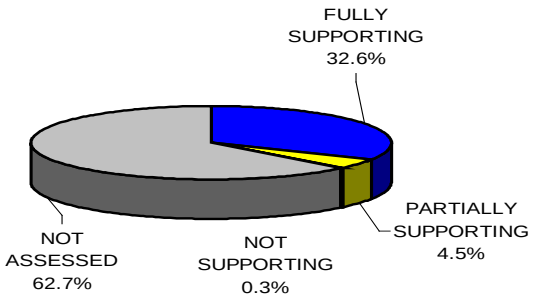
A detailed description of the watershed can be found in Chapter 2, to include information on location, population, hydrology, land use and natural and cultural resources. The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed is approximately 2,041 square miles and includes parts of ten Tennessee counties. A part of the Tennessee River drainage basin, the watershed has 3,435 stream miles and 20,763 lake acres.



Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

There are nine greenways, six interpretive areas, and three wildlife management areas located in the watershed. Over 70 rare plant and animal species have been documented in the watershed, including eight rare fish species, ten rare mussel species, two rare snail species, and one rare crustacean species.

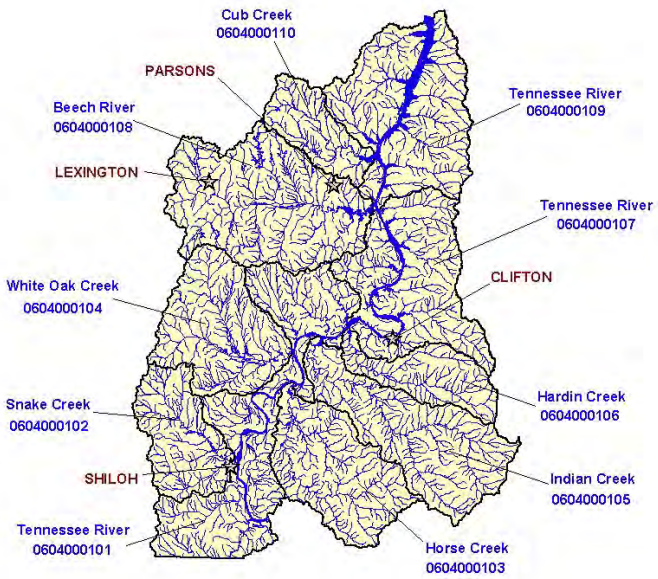
A review of water quality sampling and assessment is presented in Chapter 3. Using the Watershed Approach to Water Quality, 218 sampling events occurred in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed in 1999-2000. These were conducted at ambient, ecoregion or watershed monitoring sites. Monitoring results support the conclusion that 32.6% of total stream miles fully support designated uses.



Water Quality Assessment of Streams and Rivers in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. Assessment data are based on the 2002 Water Quality Assessment of 3,435.2 miles in the watershed.

Also in Chapter 3, a series of maps illustrate Overall Use Support in the watershed, as well as Use Support for the individual uses of Fish and Aquatic Life Support, Recreation, Irrigation, and Livestock Watering and Wildlife. Another series of maps illustrate streams that are listed for impairment by specific causes (pollutants) such as Siltation, Habitat Alteration, Organic Enrichment/Low Dissolved Oxygen and Polychlorinated biphenyls.

Point and Nonpoint Sources are addressed in Chapter 4. Chapter 4 is organized by HUC-10 subwatersheds. Maps illustrating the locations of STORET monitoring sites and USGS stream gauging stations are presented in each subwatershed.



The Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed is Composed of Ten USGS-Delineated Subwatersheds (10-Digit Subwatersheds).

Point source contributions to the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed consist of 18 individual NPDES-permitted facilities, five of which discharge into streams that have been listed on the 1998 303(d) list. Other point source permits in the watershed are Aquatic Resource Alteration Permits (46), Tennessee Multi-Sector Permits (46), Mining Permits (21), Ready-Mix Concrete Plant Permits (1) and Water Treatment Plant Permits (4). Agricultural operations include cattle, chicken, hog, and sheep farming. Maps illustrating the locations of NPDES and ARAP permit sites are presented in each subwatershed.

Chapter 5 is entitled *Water Quality Partnerships in the Tennessee Western Valley (Beech River) Watershed* and highlights partnerships between agencies and between agencies and landowners that are essential to success. Programs of federal agencies (Natural Resources Conservation Service, Tennessee Valley Authority, U.S. Fish and Wildlife Service and U.S. Geological Survey), and state agencies (TDEC Division of Community Assistance, TDEC Division of Water Supply, and Tennessee Department of Agriculture) are summarized.

Point and Nonpoint source approaches to water quality problems in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed are addressed in Chapter 6. Chapter 6 also includes comments received during public meetings, along with an assessment of needs for the watershed.

The full Tennessee Western Valley (Beech River) Watershed Water Quality Management Plan can be found at:
http://www.state.tn.us/environment/wpc/watershed/wsmplans/

CHAPTER 1

WATERSHED APPROACH TO WATER QUALITY

1.1 BACKGROUND. The Division of Water Pollution Control is responsible for administration of the Tennessee Water Quality Control Act of 1977 (TCA 69–3–101). Information about the Division of Water Pollution Control, updates and announcements, may be found at http://www.state.tn.us/environment/wpc/index.html, and a summary of the organization of the Division of Water Pollution Control may be found in Appendix I.

> The mission of the Division of Water Pollution Control 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.

The Division monitors, analyzes, and reports on the quality of Tennessee's water. In order to perform these tasks more effectively, the Division adopted a Watershed Approach to Water Quality in 1996.

This Chapter summarizes TDEC's Watershed Approach to Water Quality.

1.2 WATERSHED APPROACH TO WATER QUALITY. The Watershed Approach to Water Quality is a coordinating framework designed to protect and restore aquatic systems and protect human health more effectively (EPA841-R-95-003). The Approach is based on the concept that many water quality problems, like the accumulation of pollutants or nonpoint source pollution, are best addressed at the watershed level. In addition, a watershed focus helps identify the most cost-effective pollution control strategies to meet clean water goals. Tennessee's Watershed Approach, updates and public participation opportunities, may be found on the web at http://www.state.tn.us/environment/wpc/wshed1.htm.

Watersheds are appropriate as organizational units because they are readily identifiable landscape units with readily identifiable boundaries that integrate terrestrial, aquatic, and geologic processes. Focusing on the whole watershed helps reach the best balance among efforts to control point source pollution and polluted runoff as well as protect drinking water sources and sensitive natural resources such as wetlands (EPA-840-R-98-001).

Four main features are typical of the Watershed Approach: 1) Identifying and prioritizing water quality problems in the watershed, 2) Developing increased public involvement, 3) Coordinating activities with other agencies, and 4) Measuring success through increased and more efficient monitoring and other data gathering.

Typically, the Watershed Approach meets the following description (EPA841-R-95-003):

- Features watersheds or basins as the basic management units
- Targets priority subwatersheds for management action
- Addresses all significant point and nonpoint sources of pollution
- Addresses all significant pollutants
- Sets clear and achievable goals
- Involves the local citizenry in all stages of the program
- Uses the resources and expertise of multiple agencies
- Is not limited by any single agency's responsibilities
- Considers public health issues

An additional characteristic of the Watershed Approach is that it complements other environmental activities. This allows for close cooperation with other state agencies and local governments as well as with federal agencies such as the Tennessee Valley Authority and the U.S. Army Corps of Engineers, U.S. Department of Agriculture (*e.g.*, Natural Resources Conservation Service, United States Forest Service), U.S. Department of the Interior (*e.g.* United States Geological Survey, U.S. Fish and Wildlife Service, National Park Service). When all permitted dischargers are considered together, agencies are better able to focus on those controls necessary to produce measurable improvements in water quality. This also results in a more efficient process: It encourages agencies to focus staff and financial resources on prioritized geographic locations and makes it easier to coordinate between agencies and individuals with an interest in solving water quality problems (EPA841-R-003).

The Watershed Approach is not a regulatory program or a new EPA mandate; rather it is a decision making process that reflects a common strategy for information collection and analysis as well as a common understanding of the roles, priorities, and responsibilities of all stakeholders within a watershed. The Watershed Approach utilizes features already in state and federal law, including:

- Water Quality Standards
- National Pollutant Discharge Elimination System (NPDES)
- Total Maximum Daily Loads (TMDLs)
- Clean Lakes Program
- Nonpoint Source Program
- Groundwater Protection

Traditional activities like permitting, planning, and monitoring are also coordinated in the Watershed Approach. A significant change from the past, however, is that the Watershed Approach encourages integration of traditional regulatory (point source pollution) and nonregulatory (nonpoint sources of pollution) programs. There are additional changes from the past as well:

THE PAST	WATERSHED APPROACH
Focus on fixed-station ambient monitoring	Focus on comprehensive watershed monitoring
Focus on pollutant discharge sites	Focus on watershed-wide effects
Focus on WPC programs	Focus on coordination and cooperation
Focus on point sources of pollution	Focus on all sources of pollution
Focus on dischargers as the problem	Focus on dischargers as an integral part of the solution
Focus on short-term problems	Focus on long-term solutions

Table 1-1. Contrast Between the Watershed Approach and the Past.

This approach places greater emphasis on all aspects of water quality, including chemical water quality (conventional pollutants, toxic pollutants), physical water quality (temperature, flow), habitat quality (channel morphology, composition and health of benthic communities), and biodiversity (species abundance, species richness).

1.2.A. Components of the Watershed Approach. Tennessee is composed of fifty-five watersheds corresponding to the 8-digit USGS Hydrologic Unit Codes (HUC-8). These watersheds, which serve as geographic management units, are combined in five groups according to year of implementation.

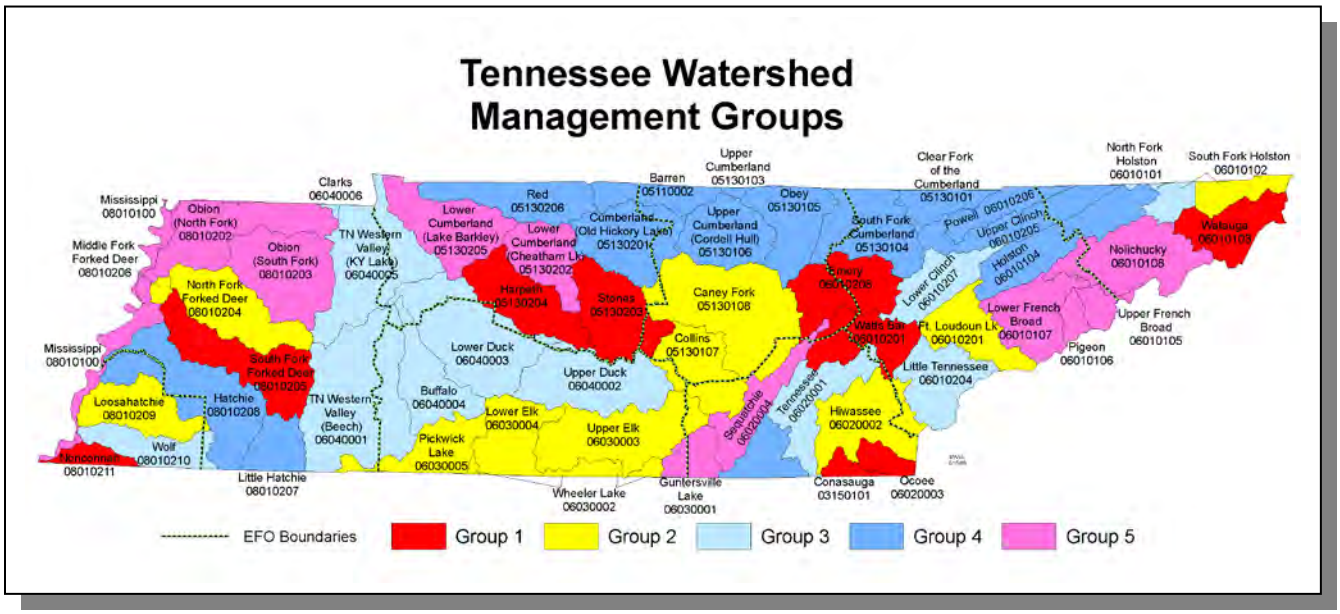


Figure 1-1. Watershed Groups in Tennessee's Watershed Approach to Water Quality.

Each year, TDEC conducts monitoring in one-fifth of Tennessee's watersheds; assessment, priority setting and follow-up monitoring are conducted in another one fifth of watersheds; modeling and TMDL studies in another one fifth; developing management plans in another one fifth; and implementing management plans in another one fifth of watersheds.

GROUP	WEST TENNESSEE	MIDDLE TENNESSEE	EAST TENNESSEE
1	Nonconnah South Fork Forked Deer	Harpeth Stones	Conasauga Emory Ocoee Watauga Watts Bar
2	Loosahatchie Middle Fork Forked Deer North Fork Forked Deer	Caney Fork Collins Lower Elk Pickwick Lake Upper Elk Wheeler Lake	Fort Loudoun Hiwassee South Fork Holston (Upper) Wheeler Lake
3	Tennessee Western Valley (Beech River) Tennessee Western Valley (KY Lake) Wolf River	Buffalo Lower Duck Upper Duck	Little Tennessee Lower Clinch North Fork Holston South Fork Holston (Lower) Tennessee (Upper)
4	Lower Hatchie Upper Hatchie	Barren Obey Red Upper Cumberland (Cordell Hull Lake) Upper Cumberland (Old Hickory Lake) Upper Cumberland (Cumberland Lake)	Holston Powell South Fork Cumberland Tennessee (Lower) Upper Clinch Upper Cumberland (Clear Fork)
5	Mississippi North Fork Obion South Fork Obion	Guntersville Lake Lower Cumberland (Cheatham Lake) Lower Cumberland (Lake Barkley)	Lower French Broad Nolichucky Pigeon Upper French Broad

Table 1-2. Watershed Groups in Tennessee's Watershed Approach.

In succeeding years of the cycle, efforts rotate among the watershed groups. The activities in the five year cycle provide a reference for all stakeholders.

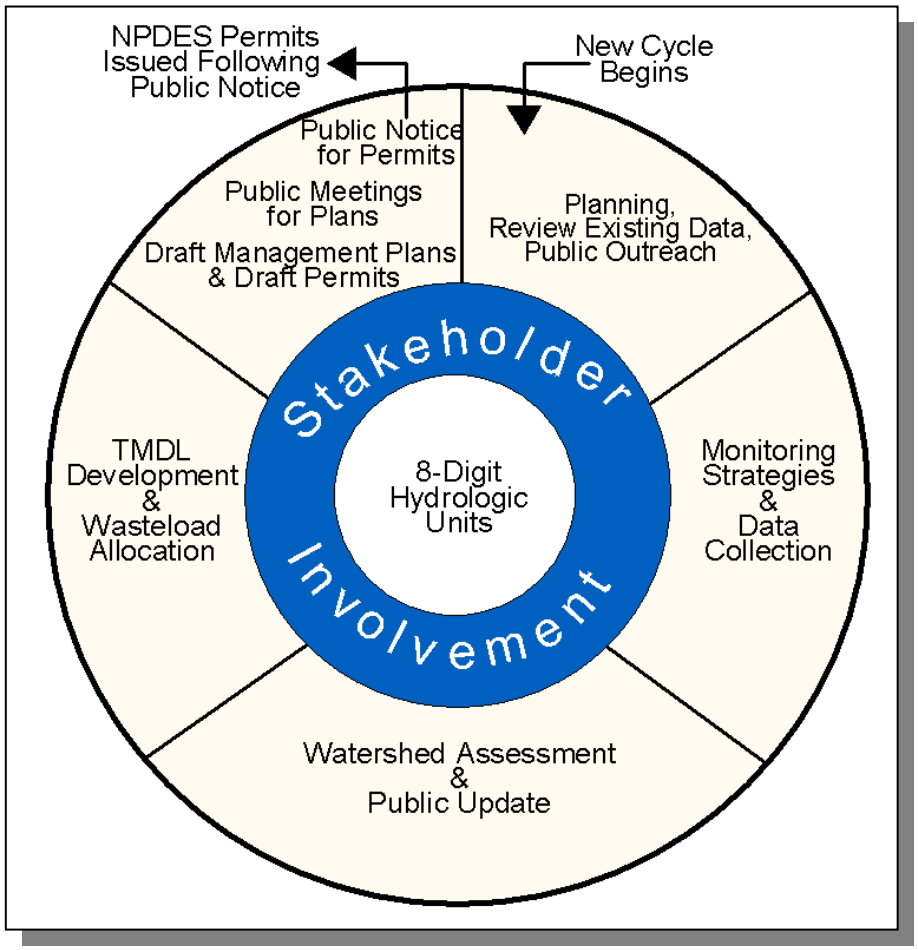


Figure 1-2. The Watershed Approach Cycle.

The six key activities that take place during the cycle are:

1. Planning and Existing Data Review. Existing data and reports from appropriate agencies and organizations are compiled and used to describe the current conditions and status of rivers and streams. Reviewing all existing data and comparing agencies' work plans guide the development of an effective monitoring strategy.

2. Monitoring. Field data is collected for streams in the watershed. These data supplement existing data and are used for the water quality assessment.

3. Assessment. Monitoring data are used to determine the status of the stream's designated use supports.

4. Wasteload Allocation/TMDL Development. Monitoring data are used to determine nonpoint source contributions and pollutant loads for permitted dischargers releasing wastewater to the watershed. Limits are set to assure that water quality is protected.

5. Permits. Issuance and expiration of all discharge permits are synchronized based on watersheds. Currently, 1700 permits have been issued in Tennessee under the federally delegated National Pollutant Discharge Elimination System (NPDES).

6. Watershed Management Plans. These plans include information for each watershed including general watershed description, water quality goals, major water quality concerns and issues, and management strategies.

Public participation opportunities occur throughout the entire five year cycle. Participation in Years 1, 3 and 5 is emphasized, although additional meetings are held at stakeholder's request. People tend to participate more readily and actively in protecting the quality of waters in areas where they live and work, and have some roles and responsibilities:

- Data sharing
- Identification of water quality stressors
- Participation in public meetings
- Commenting on management plans
- Shared commitment for plan implementation

1.2.B. Benefits of the Watershed Approach. The Watershed Approach fosters a better understanding of the physical, chemical and biological effects on a watershed, thereby allowing agencies and citizens to focus on those solutions most likely to be effective. The Approach recognizes the need for a comprehensive, ecosystem-based approach that depends on local governments and local citizens for success (EPA841-R-95-004). On a larger scale, many lessons integrating public participation with aquatic ecosystem-based programs have been learned in the successful Chesapeake Bay, Great Lakes, Clean Lakes, and National Estuary Programs.

Benefits of the Watershed Approach include (EPA841-R-95-004):

- Focus on water quality goals and ecological integrity rather than on program activities such as number of permits issued.

- Improve basis for management decisions through consideration of both point and nonpoint source stressors. A watershed strategy improves the scientific basis for decision making and focuses management efforts on basins and watersheds where they are most needed. Both point and nonpoint control strategies are more effective under a watershed approach because the Approach promotes timely and focused development of TMDLs.

- Enhance program efficiency, as the focus becomes watershed. A watershed focus can improve the efficiency of water management programs by facilitating consolidation of programs within each watershed. For example, handling all point source dischargers in a watershed at the same time reduces administrative costs due to the potential to combine hearings and notices as well as allowing staff to focus on more limited areas in a sequential fashion.

- Improve coordination between federal, state and local agencies including data sharing and pooling of resources. As the focus shifts to watersheds, agencies are better able to participate in data sharing and coordinated assessment and control strategies.

- Increase public involvement. The Watershed Approach provides opportunities for stakeholders to increase their awareness of water-related issues and inform staff about their knowledge of the watershed. Participation is via three public meetings over the five-year watershed management cycle as well as meetings at stakeholder's request. Additional opportunities are provided through the Department of Environment and Conservation homepage and direct contact with local Environmental Assistance Centers.

- Greater consistency and responsiveness. Developing goals and management plans for a basin or watershed with stakeholder involvement results in increased responsiveness to the public and consistency in determining management actions. In return, stakeholders can expect improved consistency and continuity in decisions when management actions follow a watershed plan.

Additional benefits of working at the watershed level are described in the Clean Water Action Plan (EPA-840-R-98-001), and can be viewed at http://www.cleanwater.gov/action/toc.html.

The Watershed Approach represents awareness that restoring and maintaining our waters requires crossing traditional barriers (point *vs.* nonpoint sources of pollution) when designing solutions. These solutions increasingly rely on participation by both public and private sectors, where citizens, elected officials and technical personnel all have opportunity to participate. This integrated approach mirrors the complicated relationships in which people live, work and recreate in the watershed, and suggests a comprehensive, watershed-based and community-based approach is needed to address these (EPA841-R-97-005).

CHAPTER 2

DESCRIPTION OF THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED

2.1. BACKGROUND. Kentucky Lake was created when TVA completed Kentucky Dam in 1944. The dam, located 22 miles upstream of the confluence of the Tennessee and Ohio Rivers, is 206 feet high and 8,422 feet long; it's the longest in the TVA system. The Western edge of the watershed defines the Tennessee Western Valley (to the west is the Mississippi River Valley). The watershed has been split into the upstream (Beech River) and downstream drainage areas (KY Lake).

This Chapter describes the location and characteristics of the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Tennessee Western Valley (Beech River) Watershed is located in Tennessee and Mississippi. The Tennessee portion of the watershed (97.8% of the watershed) includes parts of Benton, Carroll, Chester, Decatur Hardin, Henderson, Humphreys, McNairy, Perry, and Wayne Counties.

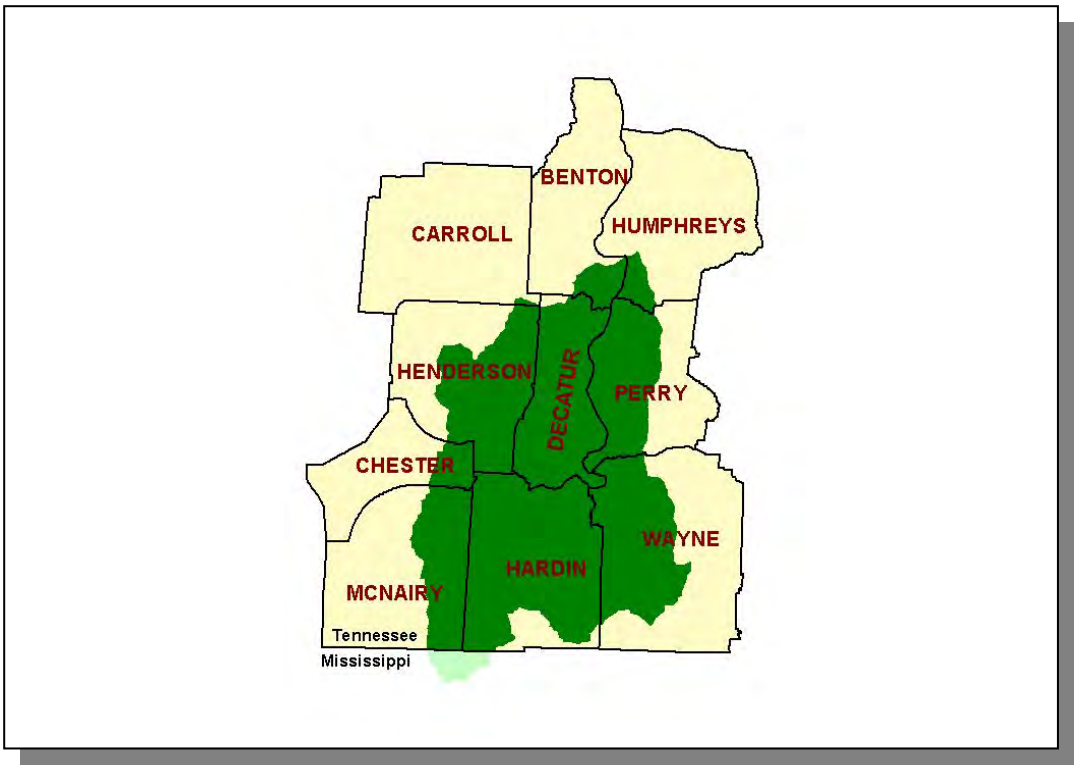


Figure 2-1. General Location of the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Dark green, Tennessee portion; light green, Mississippi portion.*

COUNTY	% OF WATERSHED IN EACH COUNTY
Hardin	26.6
Decatur	16.9
Wayne	15.6
Henderson	14.5
Perry	10.6
McNairy	9.6
Benton	2.2
Chester	2.2
Humphreys	1.6
Carroll	0.2

Table 2-1. The Tennessee Western Valley (Beech River) Watershed Includes Parts of Ten West Tennessee Counties. *Percentages are calculated for Tennessee portion of watershed.*

2.2.B. Population Density Centers. Six state highways and one interstate serve the major communities in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

Figure 2-2. Municipalities and Roads in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

MUNICIPALITY	POPULATION	COUNTY
Lexington*	8,353	Henderson
Savannah*	6,588	Hardin
Parsons	2,430	Decatur
Adamsville	1,824	McNairy
Crump	1,672	Hardin
Collinwood	1,036	Wayne
Michie	890	McNairy
Decaturville*	874	Decatur
Scotts Hill	859	Henderson/Decatur
Clifton	805	Wayne
Saltillo	449	Hardin
Sardis	427	Henderson
Milledgeville	424	Chester/Hardin/McNairy
Stantonville	304	McNairy
Enville	200	Chetsr/McNairy

Table 2-2. Communities and Populations in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Population based on 1999 census (Tennessee 2001/2002 Blue Book). Asterisk (*) indicates county seat.*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Tennessee Western Valley (Beech River) Watershed, designated 06040001 by the USGS, drains approximately 2,097 square miles, 2,041 square miles of which are in Tennessee, and empties to the Tennessee Western Valley (KY Lake) Watershed.

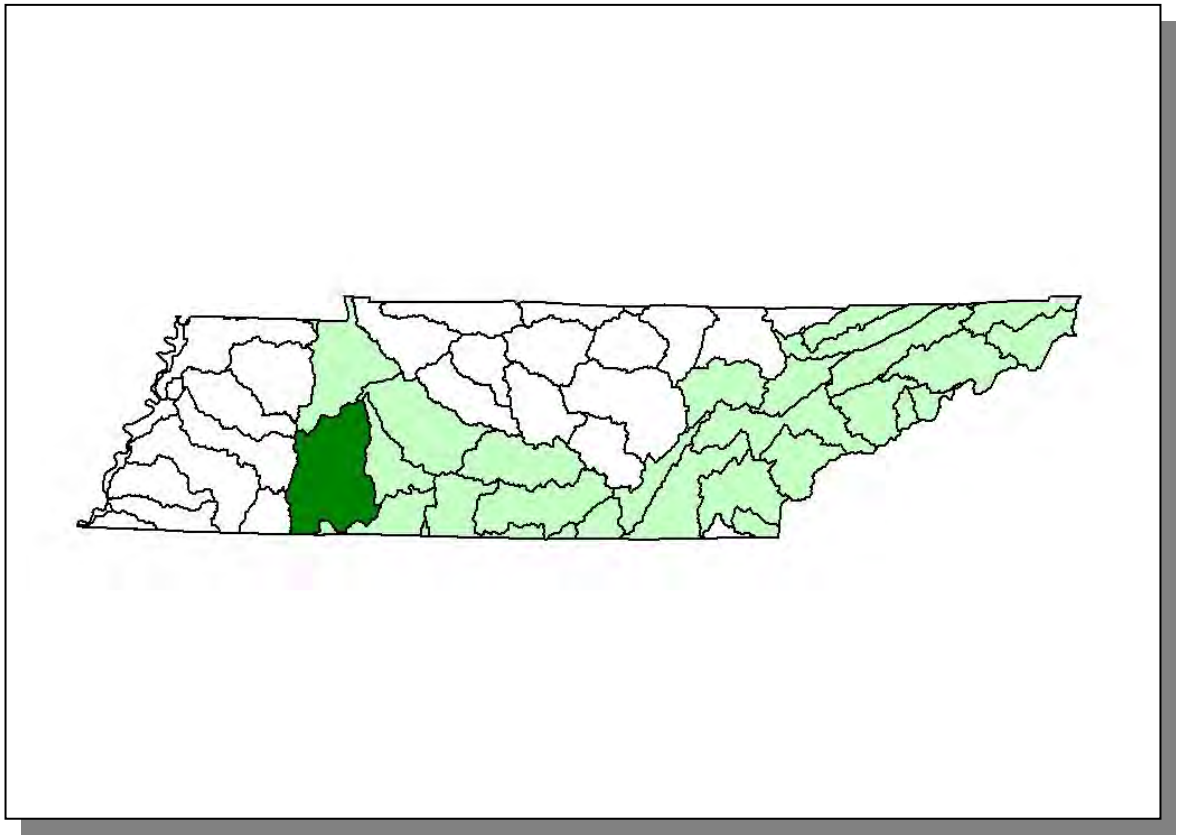


Figure 2-3. The Tennessee Western Valley (Beech River) Watershed is Part of the Tennessee River Basin.

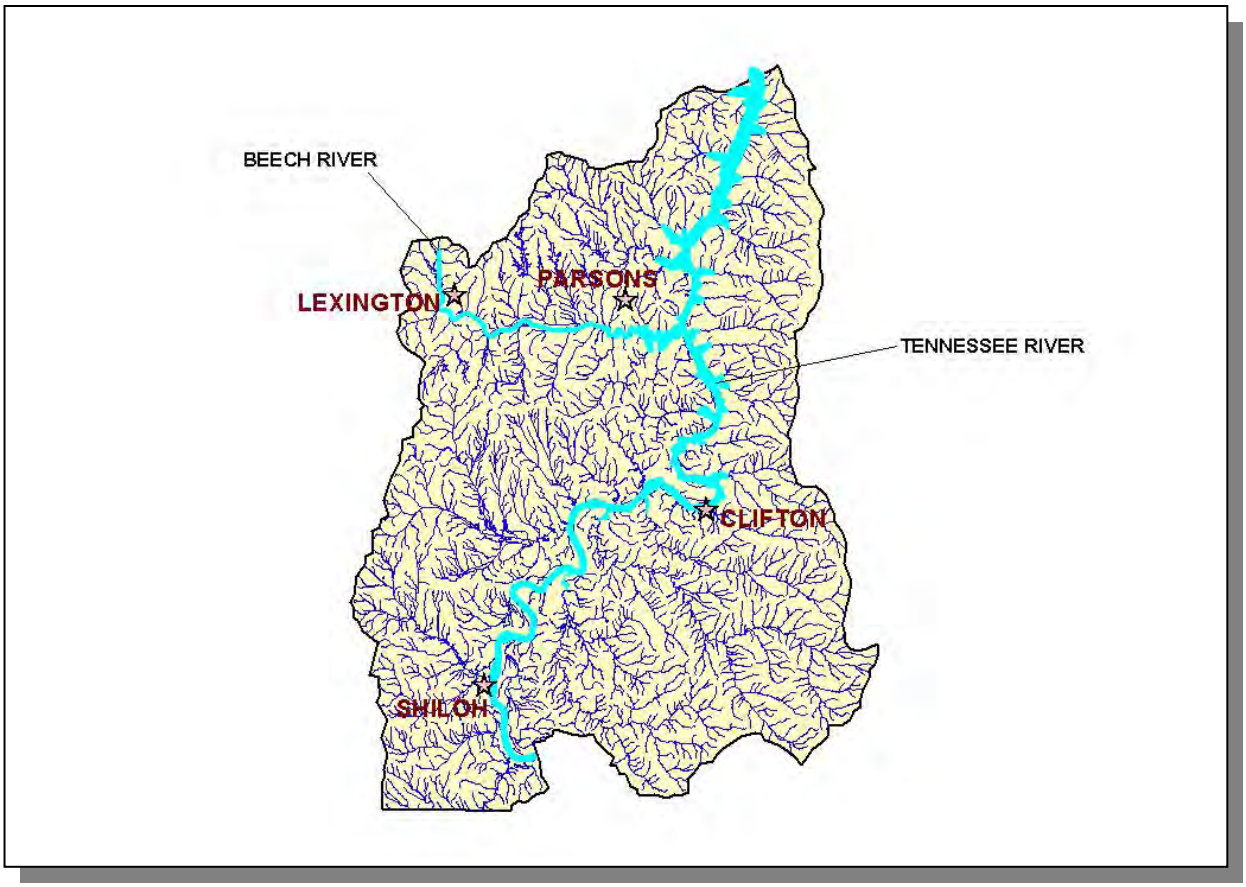


Figure 2-4. Hydrology in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *There are 3,435 stream miles and 20,763 lake acres in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed as catalogued in the assessment database. An additional 88 stream miles are located in the Mississippi portion of the watershed as catalogued in the River Reach File 3 database. The Tennessee River and Beech River, and the cities of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

2.3.B. Dams. There are 23 dams inventoried by TDEC Division of Water Supply in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

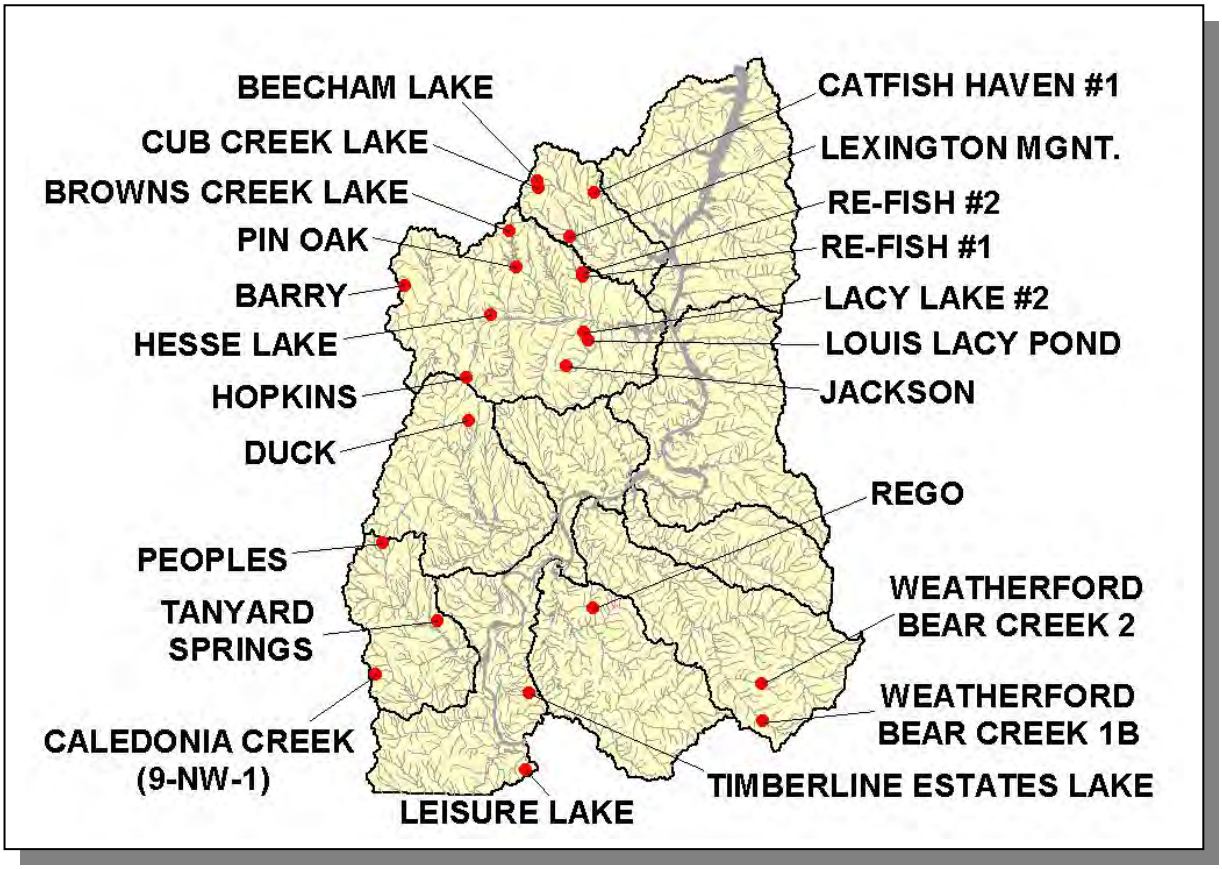


Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *More information is provided in Appendix II and on the TDEC homepage at http://gwidc.memphis.edu/website/dws/.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

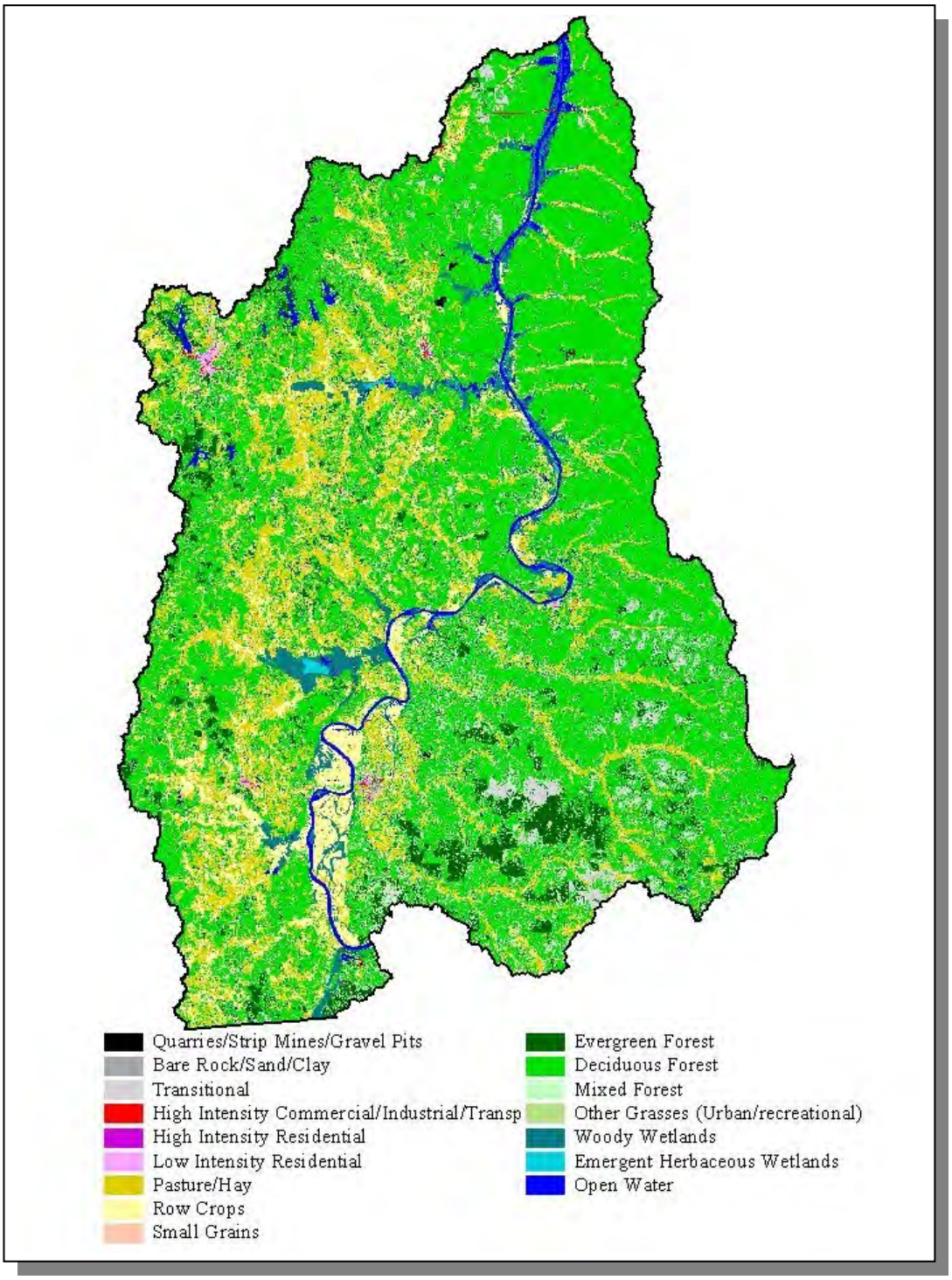


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery in the Group 3 Portion of the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

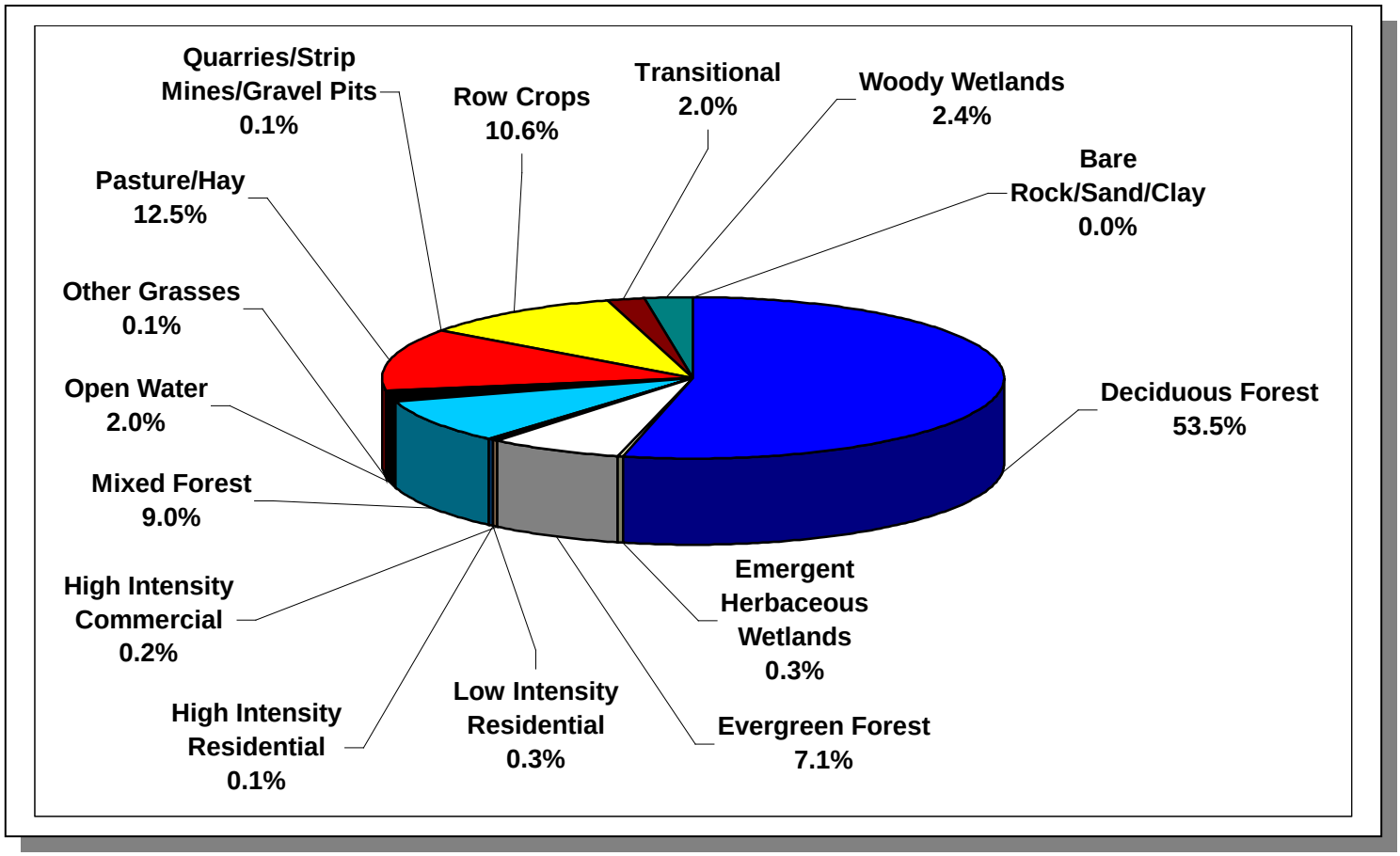


Figure 2-7. Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *More information is provided in Appendix II.*

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term "karst" describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term "karst" is named after a famous region in the former country of Yugoslavia.

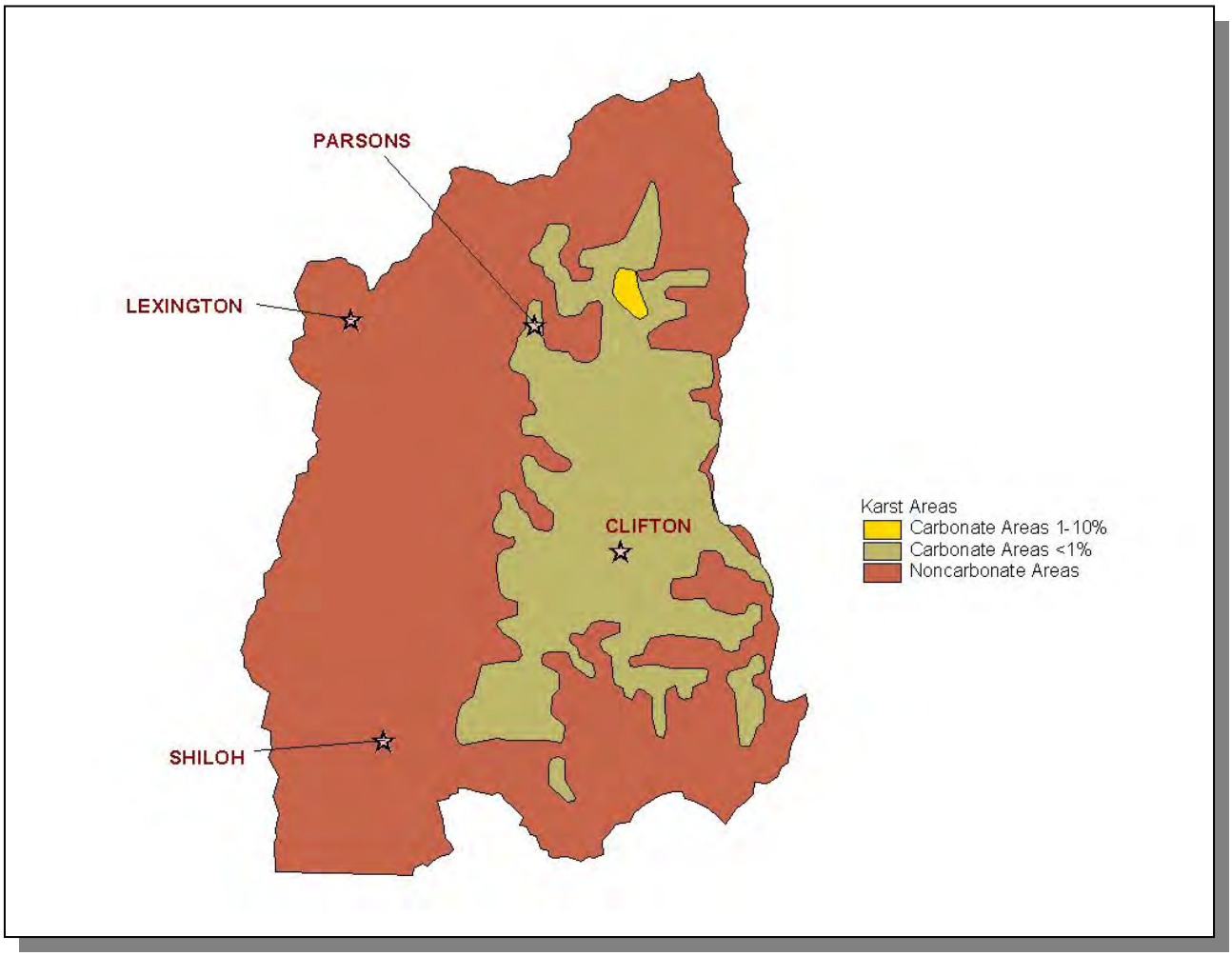


Figure 2-8. Illustration of Karst Areas in Tennessee Portion of Tennessee Western Valley (Beech River) Watershed. *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed lies within 2 Level III ecoregions (Southeastern Plains and Interior Plateau) and contains 5 Level IV subecoregions:

- **Blackland Prairie (65a),** extending north from Mississippi, is a flat to undulating lowland region covering only a small portion of McNairy County, Tennessee. Although there is some of the Cretaceous-age chalk, marl, and calcareous clay that characterizes the region in Mississippi and Alabama, the northern extent of the Blackland Prairie in Tennessee is not distinct. To the south, the natural vegetation had dominant trees of sweetgum, post oak, and red cedar, along with patches of bluestem prairie. Today, the area is mostly in cropland and pasture, with small patches of mixed hardwoods.

- **Southeastern Plains and Hills (65e)** contain north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, with Cretaceous fine sand, fossiliferous micaceous sand, and silty clays to the east. Elevations reach over 650 feet with more rolling topography and relief than the Loess Plains (74b) to the west. Streams have increased gradient, sandy substrates, and distinct faunal characteristics. Natural vegetation is oak-hickory forest, grading into oak-hickory-pine to the south.

- **Fall Line Hills (65i)** ecoregion, comprising the Tennessee or Tombigbee Hills in Mississippi and the Fall Line Hills in Alabama, is composed primarily of Cretaceous-age coastal plain sandy sediments. The sand and chert gravel surficial materials are covered by sandy loam topsoils. Terrain is mostly oak-hickory-pine forest on open hills with 100-200 feet of relief. Elevations in the small Tennessee portion, roughly between Chambers Creek and Pickwick Lake in Hardin County, are 450-685 feet.

- **The Transition Hills (65j)** have the highest elevations in Ecoregion 65, and contain characteristics of both the Southeastern Plains (65e) and the Interior Plateau (71). Many streams of this transition area have cut down into the Mississippian, Devonian, and Silurian-age rocks and may appear similar to those of the Interior Plateau (71). Cretaceous-age coastal plain deposits of silt, sand, clay, and gravel overlie the older limestone, shale, and chert. It is a mostly forested region of oak-hickory-pine, and has pine plantation activities associated with pulp and paper operations.

- **Western Highland Rim (71f)** is characterized by dissected, rolling terrain of open hills, with elevations of 400-1000 feet. The geologic base of Mississippian-age limestone, chert, and shale is covered by soils that tend to be cherty and acidic with low to moderate fertility. Streams are relatively clear with a moderate gradient. Substrates are coarse chert, gravel and sand with areas of bedrock. The native oak-hickory forests were removed over broad areas in the mid-to late 1800's in conjunction with the iron-ore related mining and smelting of the mineral limonite, however today the region is again heavily forested. Some agriculture occurs on the flatter interfluves and in the stream and river valleys. The predominant land uses are hay, pasture, and cattle with some cultivation of corn and tobacco.

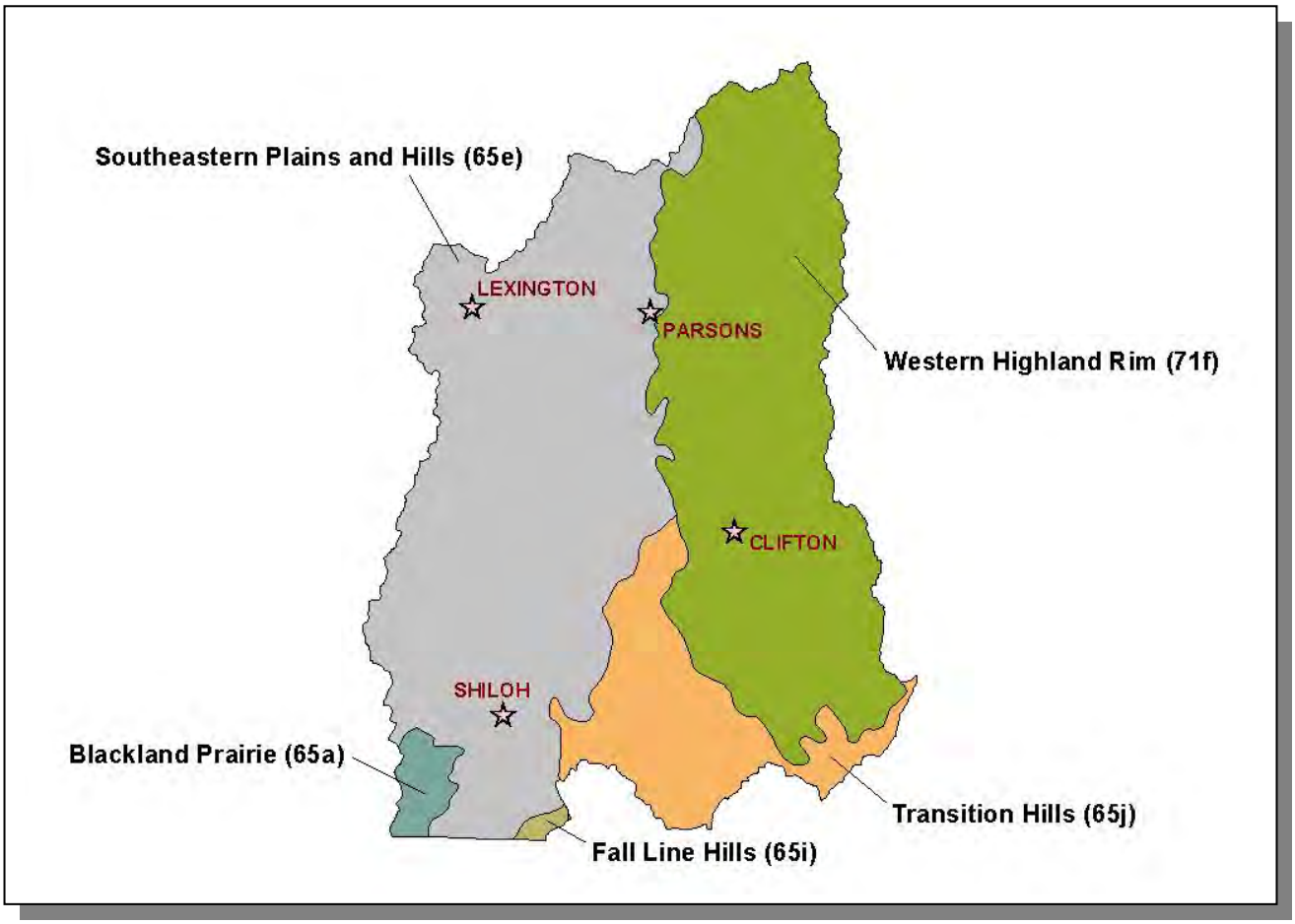


Figure 2-9. Level IV Ecoregions in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

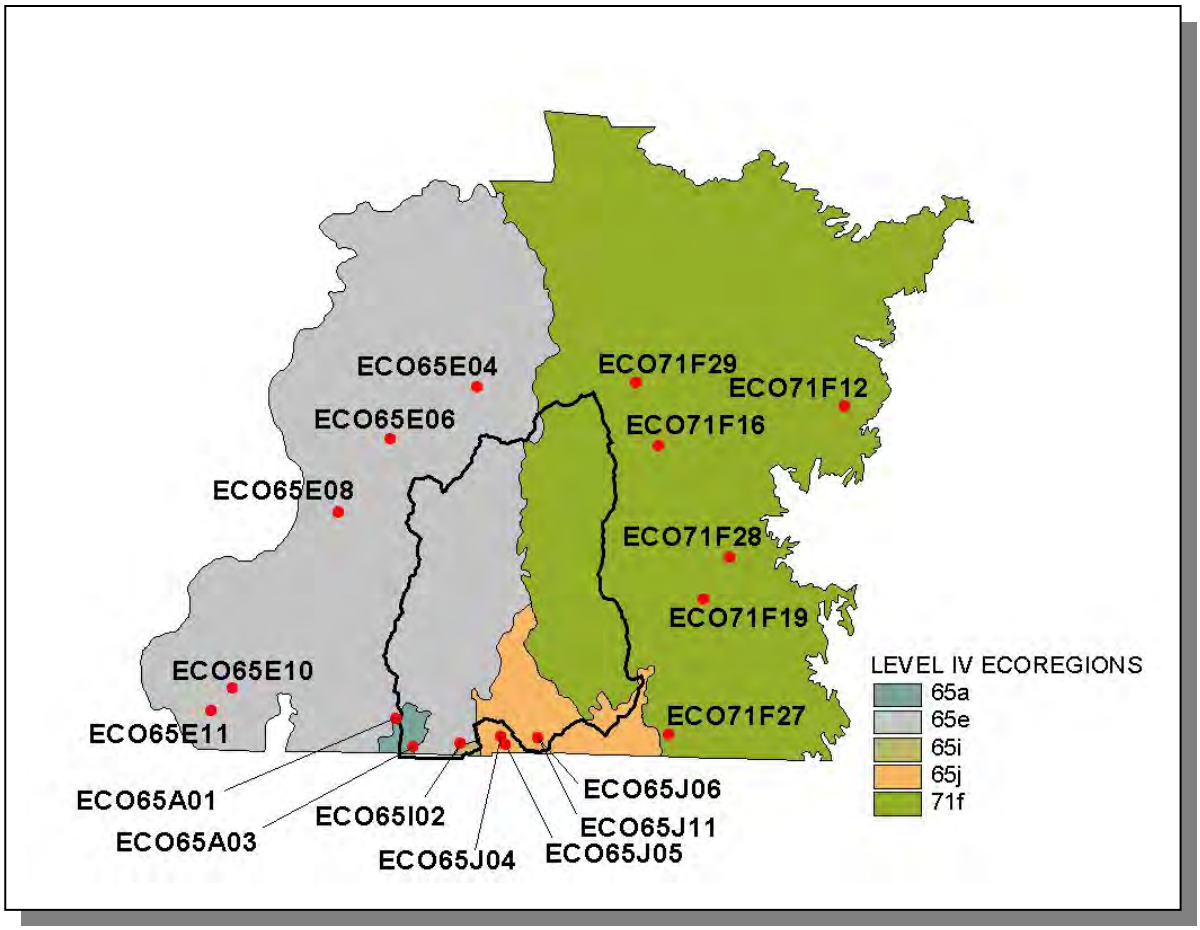


Figure 2-10. Ecoregion Monitoring Sites in Level IV Ecoregions 65a, 65e, 65i, 65j, and 71f in Tennessee. *The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed boundary is shown for reference. More information is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	1
Insects and Spiders	1
Mussels	10
Snails	2
Amphibians	1
Birds	8
Fish	8
Mammals	4
Reptiles	4
Plants	36
Total	**75**

Table 2-3. There are 75 Known Rare Plant and Animal Species in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

In the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed, there are 8 rare fish species, 1 rare crustacean species, 9 rare mussel species, and 5 rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Carpiodes velifer	Highfin Carpsucker		D
Cycleptus elongatus	Blue Sucker	MC	T
Etheostoma corona	Crown Darter	MC	E
Hemitremia flammea	Flame Chub	MC	D
Ichthyomyzon gagei	Southern Brook Lamprey		D
Ichthyomyzon unicuspis	Silver Lamprey		D
Noturus sp 3	Saddled Madtom		T
Typhlichthys subterraneus	Southern Cavefish	MC	D
Orconectes wrighti	A Crayfish	MC	E
Cumberlandia monodonta	Spectaclecase		
Cyprogenia irrorata	Eastern Fanshell Pearly Mussel	LE	E
Hemistena lata	Cracking Pearly Mussel	LE	E
Lampsilis abrupta	Pink Mucket	LE	E
Obovaria retusa	Ring Pink	LE	E
Plethobasus cicatricosus	White Wartyback	LE	E
Plethobasus cooperianus	Orange-Foot Pimpleback	LE	E
Pleuronema clava	Clubshell	LE	E
Pleurobema plenum	Rough Pigtoe	LE	E
Quadrula cylindrica cylindrica	Rabbitsfoot		
Lithasia salebrosa	Rustic Rocksnail		
Vertigo teskeyae	Swamp vertigo		

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/nh/data.php.*

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

http://www.state.tn.us/environment/nh/wetlands/

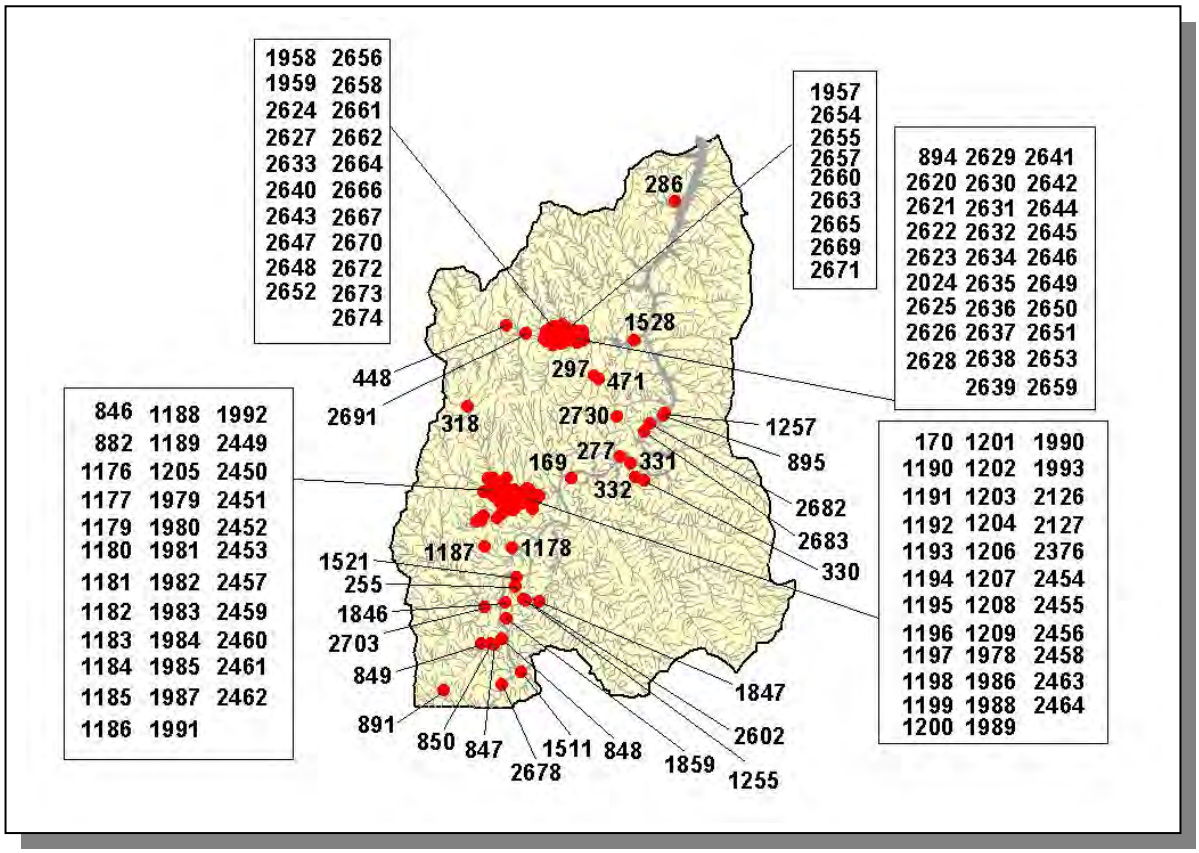


Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands*. More information is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Greenways. The Tennessee Western Valley (Beech River) Watershed has at least nine greenways/trails:

- Beech Bend Bicycle Train in Decaturville
- Crump Bicycle Trail
- Crump walking Trail
- Decatur County Hiking Trail
- Decatur County Nature Trail
- Savannah Nature Center
- Savannah Trail of Tears
- Scotts Hill Trail
- Tennessee River Trail in Perry County

More information about greenways and trails in the watershed may be found at:

http://www2.state.tn.us/tdec/GREENWAYS/tnmap.htm

2.7.B. Interpretive Areas. Some sites representative of the natural or cultural heritage are under state or federal protection:

- Mousetail Landing State Park is a 1,247-acre area located on the east banks of the Tennessee River. The site is managed by the state of Tennessee.
- Natchez Trace State Park and Forest was named for the famous Nashville to Natchez Highway, an important wilderness road of the late 18th and early 19th centuries. The site is managed by the sitate of Tennessee.
- Pickwick Dam Reservation is located South of Savannah and north of the Mississippi state line. It has a campground with water and electric hookups, and boat launch ramps. The site is managed by TVA.
- Pickwick Landing State Park is located at a site that was a riverboat stop in the 1840's. The park area was once provided housing for the TVA construction crews and their families. The property was transferred from TVA to the state of Tennessee in the early 1970's. The site is managed by the state of Tennessee.
- Shiloh National Military Park was established in 1894 to preserve the scene of the 1862 Civil War battle. The 4,000-acre battlefield is located on the west bank of the Tennessee River. The site is managed by the National Park Service.

- Tennessee NWR-Busseltown and Duck River Units, established in 1945, is managed by the U.S. Fish and Wildlife Service as an important resting and feeding area for wintering waterfowl as well as migratory birds and resident wildlife. The sites are managed by the U.S. Fish and Wildlife Service.

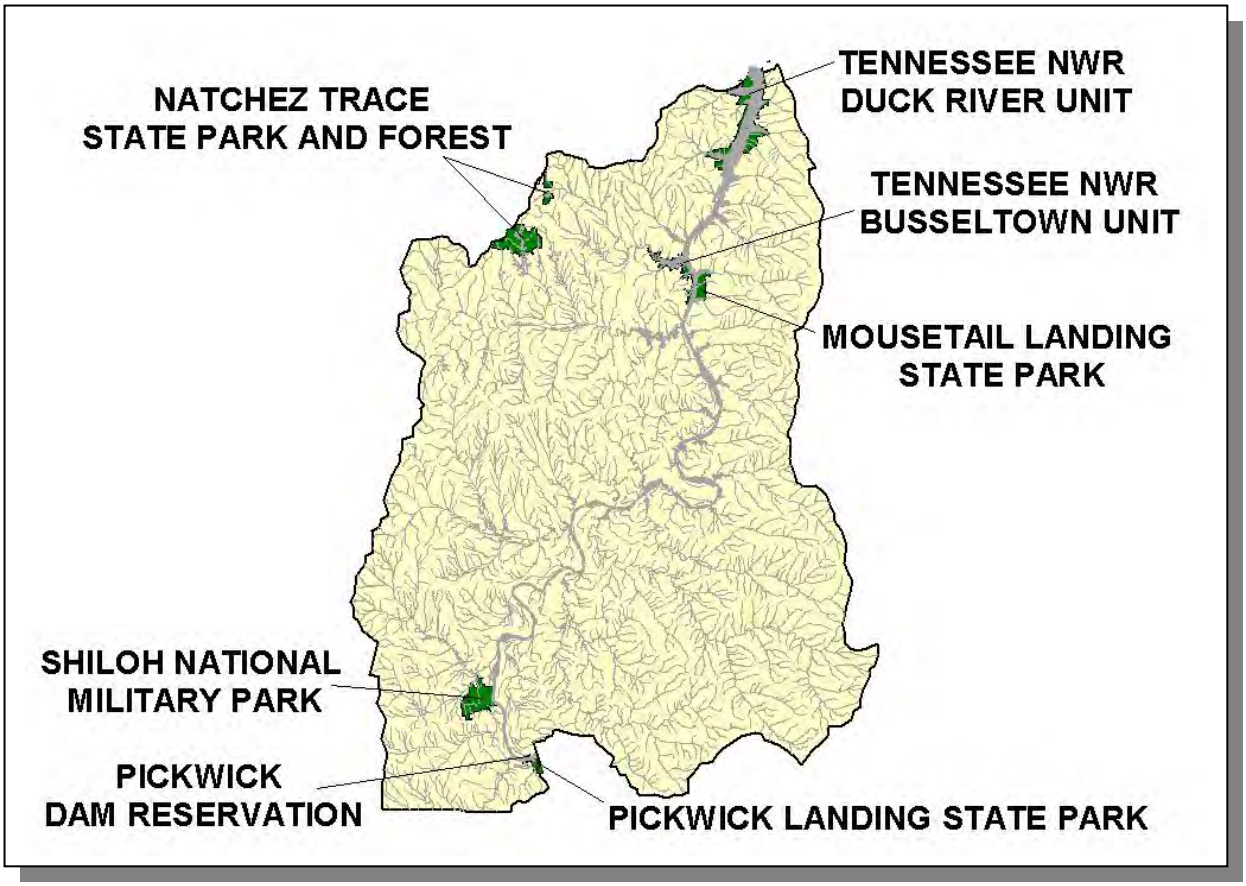


Figure 2-12. Locations of State- and Federally-Managed Lands in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

2.7.C. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages eight wildlife management areas in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

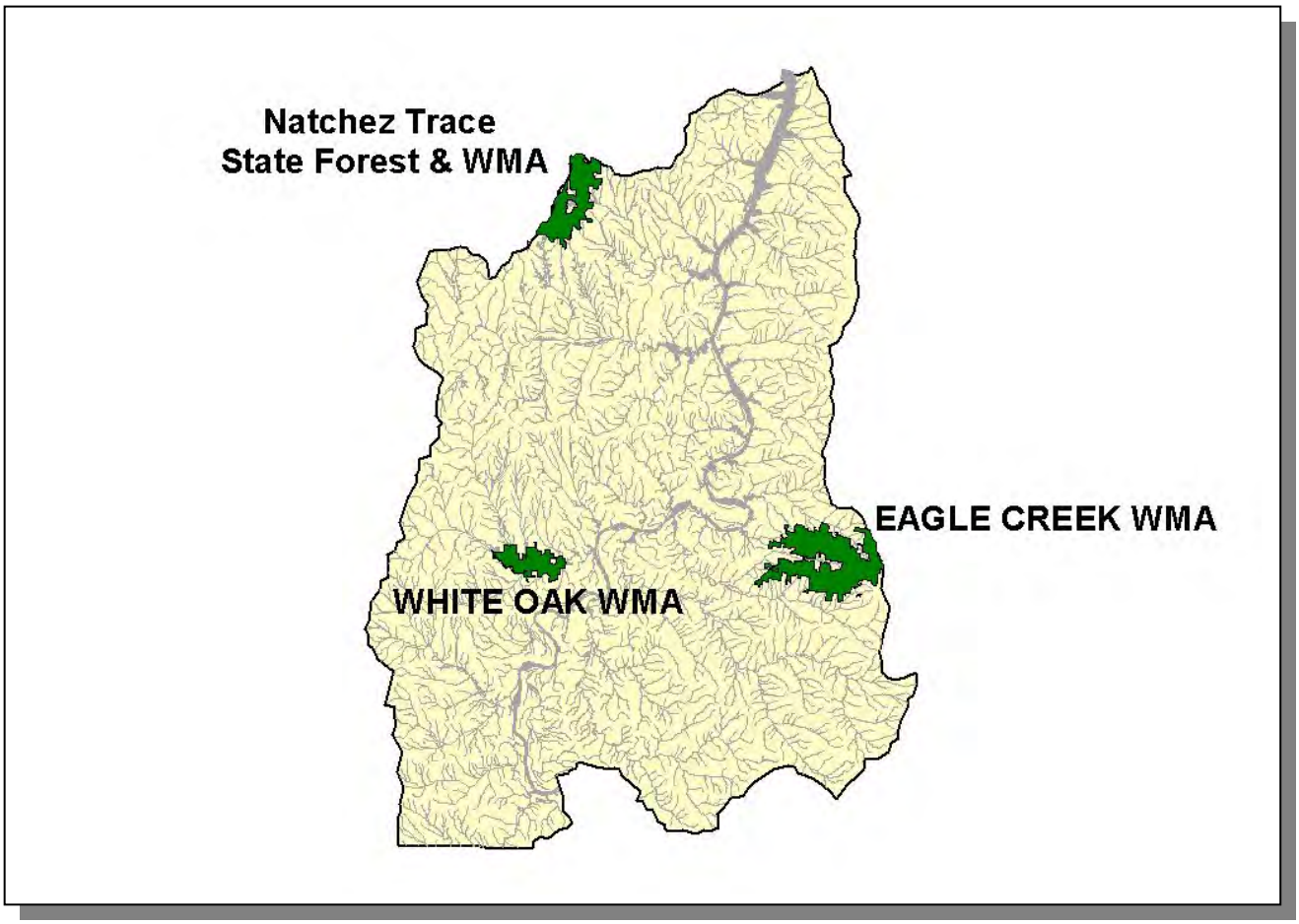


Figure 2-13. TWRA Manages Wildlife Management Areas in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

2.8. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF		STREAM	NSQ	RB	RF
Arms Creek	3				Lick Creek (West)	3		4
Bear Creek	3				Little Owl Creek	3		
Beason Creek	3				Little Snake Creek	4		
Beech Creek	3				Little White Oak Creek	3		
Beech River	3,4	3	2		Marsh Creek	2		2
Big Creek	3				Middleton Creek	4		
Big Hurricane Creek	4				Miles Creek	4		
Blue Creek	2				Morrison Creek	2		
Boon Creek	2				Mud Creek	2		
Browns Creek	4				North Fork Beason Creek	3		
Cane Creek	4		2,3		North Fork Mud Creek	3		
Cedar Creek	2				Owl Creek	4		
Chalk Creek	3				Piney Creek	4		
Chambers Creek	3,4				Rayburn Creek	2		
Clarey Branch Snake Creek	4				Right Fork Whites Creek	3		
Clear Creek	2	3			Roan Creek	2		2
Crooked Creek	2		3		Rogers Creek	3		
Cub Creek	2		1,2		Rushing Creek	3		2
Cypress Creek			2		Shakerag Branch Hardin Creek	2		
Doe Creek	1,2	2			Short Creek	1		
Dollar Creek	3				Smith Fork Indian Creek	1		
Dry Creek	3				Snake Creek	4		
Eagle Creek	3	3			South Fork Mud Creek	3		
East Prong Doe Creek	2				Spring Creek	2		
English Creek	2				Stewman Creek	2		
Flat Creek	4		2		Sulfur Fork Cub Creek	3		
Flat Gap Creek	2				Toms Creek	2		
Flats Creek	4				Turkey Creek (Beech Creek)	3		2
Graham Branch Snake Creek	3				Turkey Creek (Horse Creek)	1		
Halley Creek	4				Turnbo Creek	3		3
Hardin Creek	2	3			Unnamed Creek	4		
Harmon Creek	4				Waldrop Creek	3		
Hatley Creek	4				Wardlow Creek	2		
Holland Creek	1				Waterfall Creek	1		
Horse Creek	3	3	2		Weatherford Creek	3		
Hurricane Creek	4				West Fork Cane Creek	4		
Indian Creek	2	2,3	1,2,3,4		West Prong Doe Creek	2		
Left Fork Whites Creek	3				White Oak Creek (East)	2		4
Lick Creek (East)	2		3,4		White Oak Creek (West)	3	2,3	
Lick Creek (Snake Creek)	3				Whites Creek	3		2
					Wolf Creek	4		

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project in the Tennessee Western Valley (Beech River) Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed

CHAPTER 3

WATER QUALITY ASSESSMENT OF THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED.

3.1. BACKGROUND. Section 305(b) of The Clean Water Act requires states to report the status of water quality every two years. Historically, Tennessee's methodologies, protocols, frequencies and locations of monitoring varied depending upon whether sites were ambient, ecoregion, or intensive survey. Alternatively, in areas where no direct sampling data existed, water quality may have been assessed by evaluation or by the knowledge and experience of the area by professional staff.

In 1996, Tennessee began the watershed approach to water quality protection. In the Watershed Approach, resources—both human and fiscal—are better used by assessing water quality more intensively on a watershed-by-watershed basis. In this approach, water quality is assessed in year three of the watershed cycle, following one to two years of data collection. More information about the Watershed Approach may be found in Chapter 1 and at http://www.state.tn.us/environment/wpc/watershed/

The assessment information is used in the 305(b) Report (The Status of Water Quality in Tennessee) and the 303(d) list as required by the Clean Water Act.

The 305(b) Report documents the condition of the State's waters. Its function is to provide information used for water quality based decisions, evaluate progress, and measure success.

Tennessee uses the 305(b) Report to meet four goals (from 2002 305(b) Report):

1. Assess the general water quality conditions of rivers, streams, lakes and wetlands

2. Identify causes of water pollution and the sources of pollutants

3. Specify waters which have been found to pose human health risks due to elevated bacteria levels or contamination of fish

4. Highlight areas of improved water quality

EPA aggregates the state use support information into a national assessment of the nation's water quality. This aggregated use support information can be viewed at EPA's "Surf Your Watershed" site at http://www.epa.gov/surf/.

The 303(d) list is a compilation of the waters of Tennessee that fail to support some or all of their classified uses. The 303(d) list does not include streams determined to be fully supporting designated uses as well as streams the Division of Water Pollution Control cannot assess due to lack of water quality information. Also absent are streams where a control strategy is already in the process of being implemented.

Once a stream is placed on the 303(d) list, it is considered a priority for water quality improvement efforts. These efforts not only include traditional regulatory approaches such as permit issuance, but also include efforts to control pollution sources that have historically been exempted from regulations, such as certain agricultural and forestry activities. If a stream is on the 303(d) list, the Division of Water Pollution Control cannot use its regulatory authority to allow additional sources of the same pollutant(s) for which it is listed.

States are required to develop Total Maximum Daily Loads (TMDLs) for 303(d)-listed waterbodies. The TMDL process establishes the maximum amount of a pollutant that a waterbody can assimilate without exceeding water quality standards and allocates this load among all contributing pollutant sources. The purpose of the TMDL is to establish water quality objectives required to reduce pollution from both point and nonpoint sources and to restore and maintain the quality of water resources.

The current 303(d) List is available on the TDEC homepage at:
http://www.state.tn.us/environment/wpc/publications/2004_303dlist.pdf

and information about Tennessee's TMDL program may be found at:
http://www.state.tn.us/environment/wpc/tmdl/.

This chapter provides a summary of water quality in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed, summarizes data collection and assessment results, and describes impaired waters.

3.2. DATA COLLECTION. Comprehensive water quality monitoring in the Tennessee Western Valley (Beech River) Watershed was conducted in 1999-2000. Data are from one of four site types: (1) Ambient sites, (2) Ecoregion sites, (3) Watershed sites, or (4) Tier Evaluation sites.

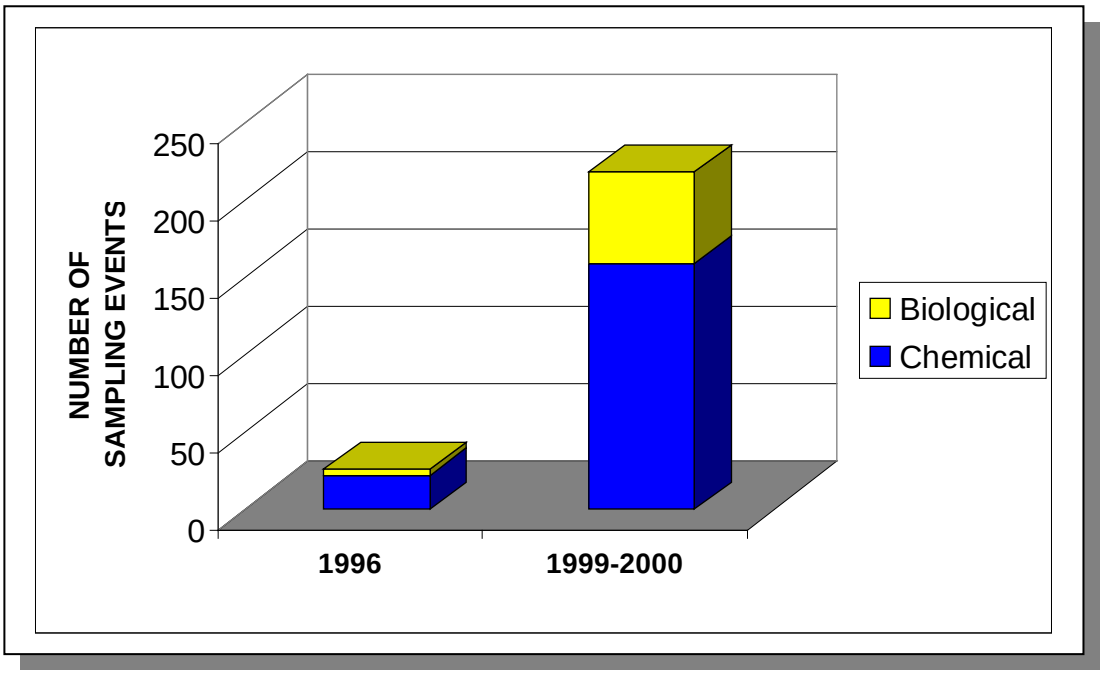


Figure 3-1. Number of Sampling Events Using the Traditional Approach (1996) and Watershed Approach (1999-2000) in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

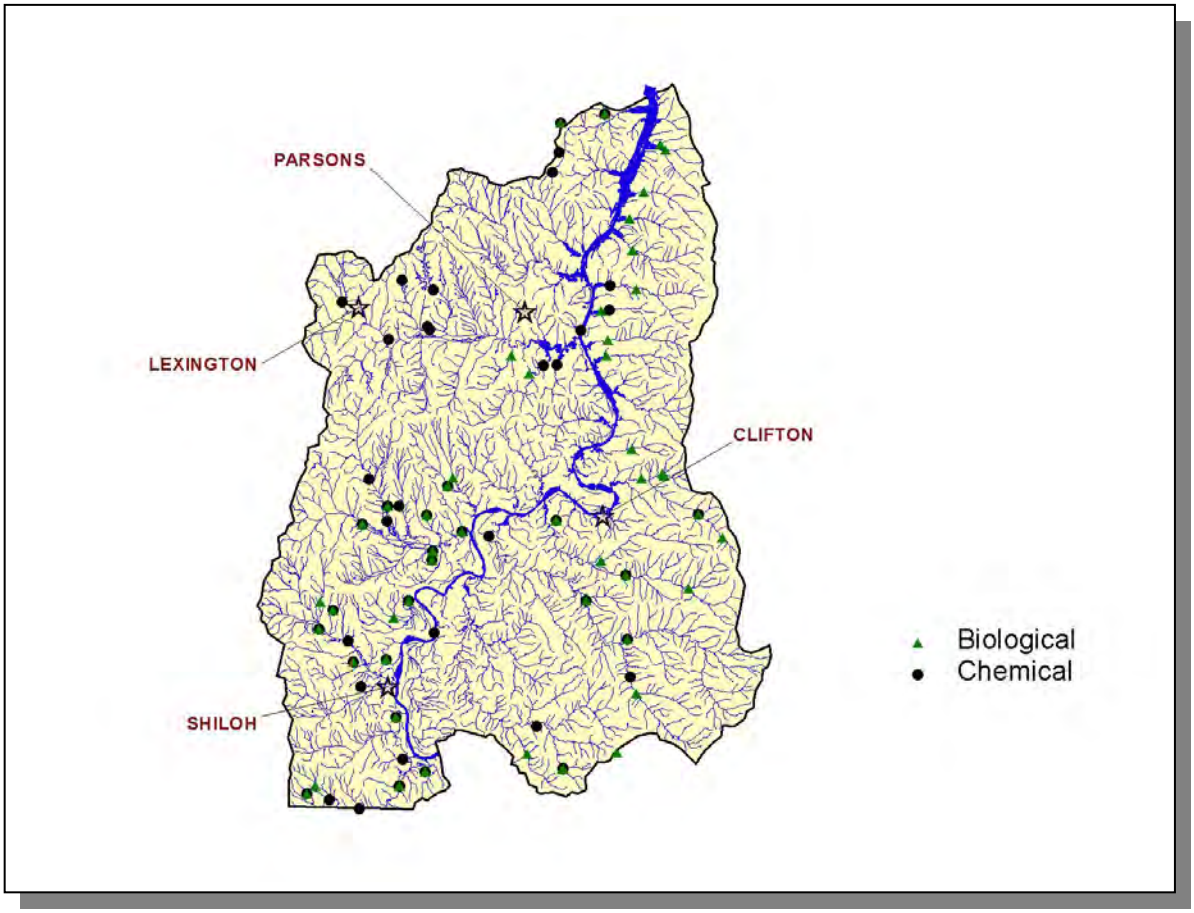


Figure 3-2. Location of Monitoring Sites in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

	1996	1999-2000
Biological	4	59
Chemical	22	159
Total	**26**	**218**

Table 3-1. Number of Sampling Events in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed During the Data Collection Phase of the Watershed Approach.

3.2.A. Ambient Monitoring Sites. These fixed-station chemical monitoring sites are sampled quarterly or monthly by the Environmental Field Office-Jackson and Environmental Field Offices-Nashville staff (this is in addition to samples collected by water and wastewater treatment plant operators). Samples are analyzed by the Tennessee Department of Health, Division of Environmental Laboratory Services. Ambient monitoring data are used to assess water quality in major bodies of water where there are NPDES facilities and to identify trends in water quality. Water quality parameters traditionally measured at ambient sites in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed are provided in Appendix IV.

Data from ambient monitoring stations are entered into the STORET (Storage and Retrieval) system administered by EPA.

3.2.B. Ecoregion Sites. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plants and animals. The delineation phase of the Tennessee Ecoregion Project was completed in 1997 when the ecoregions and subecoregions were mapped and summarized (EPA/600/R-97/022). There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee (see Chapter 2 for more details). The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed lies within 2 Level III ecoregions (Southeastern Plains and Interior Plateau) and contains 5 subecoregions (Level IV):

- Blackland Prairie (65a)
- Southeastern Plains and Hills (65e)
- Fall Line Hills (65i)
- Transition Hills (65j)
- Western Highland Rim (71f)

Ecoregion reference sites are chemically monitored using methodology outlined in the Division's Chemical Standard Operating Procedure (Standard Operating Procedure for Modified Clean Technique Sampling Protocol). Macroinvertebrate samples are collected in spring and fall. These biological sample collections follow methodology outlined in the Tennessee Biological Standard Operating Procedures Manual. Volume 1: Macroinvertebrates and EPA's Revision to Rapid Bioassessment Protocols for use in Streams and Rivers.

Ecoregion stations are scheduled to be monitored during the watershed sampling time period.

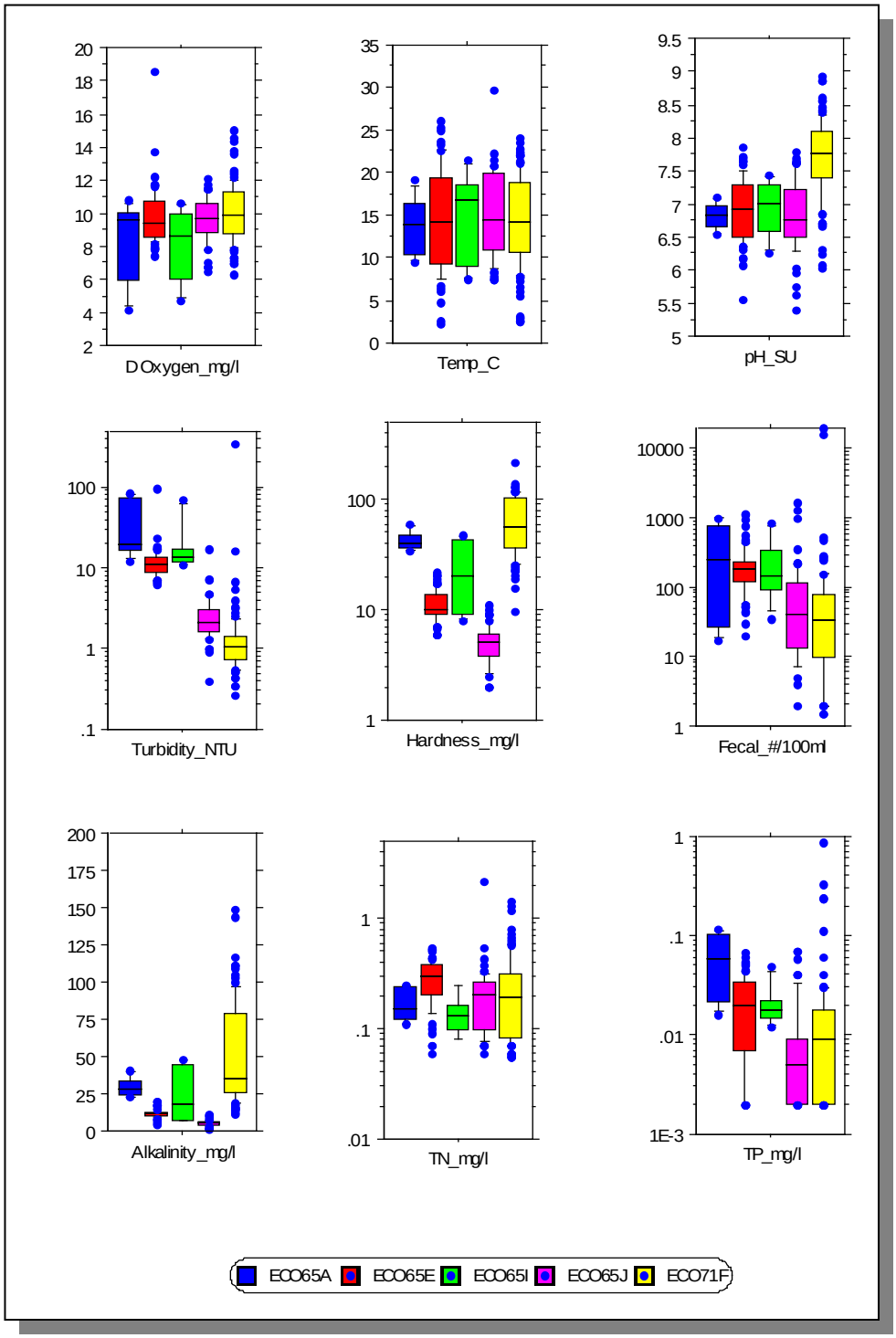


Figure 3-3. Select Chemical Data Collected in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th,*

median, 75th, and 90th percentiles. Extreme values are also shown as dots. Fecal, fecal coliform bacteria; TN, Total Nitrogen; TP, Total Phosphorus.

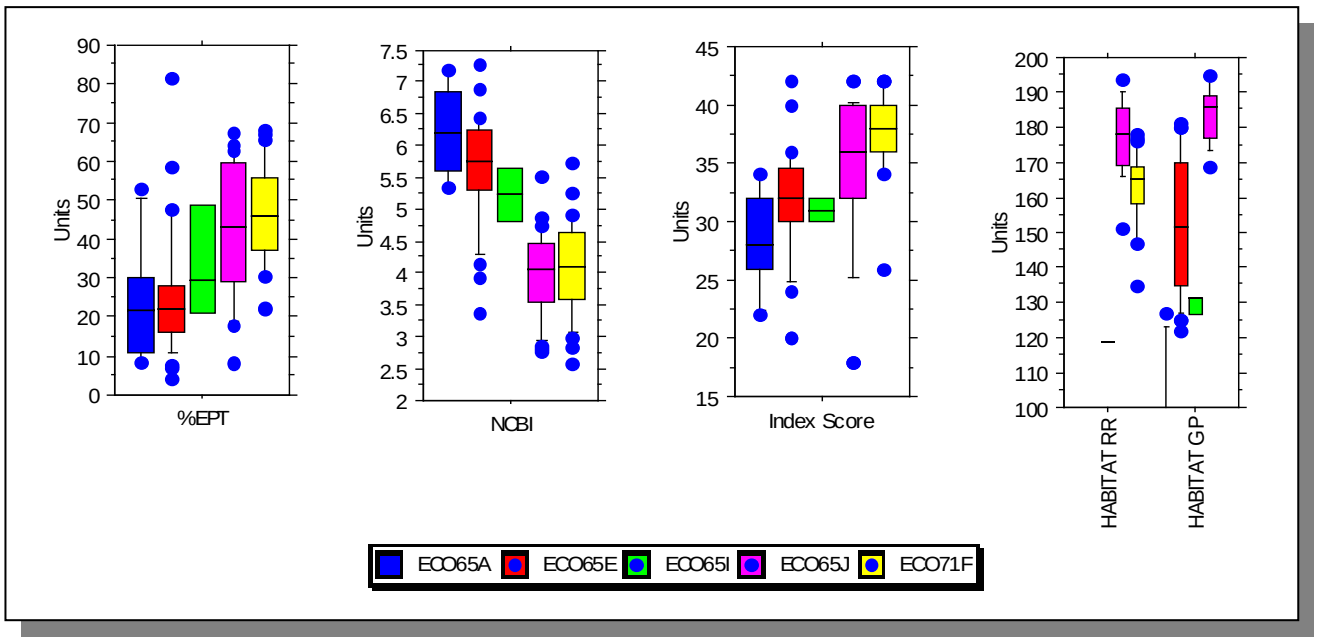


Figure 3-4. Benthic Macroinvertebrate and Habitat Scores for the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed Ecoregion Sites. *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th percentiles. Extreme values are also shown as dots. NCBI, North Carolina Biotic Index. Index Score and Habitat Riffle/Run scoring system are described in TDEC's Quality System Standard Operating Procedure for Macroinvertebrate Surveys (2002).*

3.2.C. Watershed Screening Sites. Activities that take place at watershed sites are benthic macroinvertebrate stream surveys, physical habitat determinations and/or chemical monitoring. Following review of existing data, watershed sites are selected in Year 1 of the watershed approach when preliminary monitoring strategies are developed. Additional sites may be added in Year 2 when additional monitoring strategies are implemented.

A Biological Reconnaissance (BioRecon) is used as a screening tool to describe the condition of water quality, in general, by determining the absence or presence of clean water indicator organisms, such as EPT (Ephemeroptera [mayfly], Plecoptera [stonefly], Trichoptera [caddisfly]). Factors and resources used for selecting BioRecon sites are:

- The current 303(d) list,
- HUC-10 maps (every HUC-10 is scheduled for a BioRecon)
- Land Use/Land Cover maps
- Topographic maps
- Locations of NPDES facilities
- Sites of recent ARAP activities.

An intensive multiple or single habitat assessment involves the regular monitoring of a station over a fixed period of time. Intensive surveys (Rapid Bioassessment Protocols) are performed when BioRecon results warrant it.

3.2.D. Special Surveys. These investigations are performed when needed and include:

- ARAP in-stream investigation
- Time-of-travel dye study
- Sediment oxygen demand study
- Lake eutrophication study

3.3. STATUS OF WATER QUALITY. Overall use support is a general description of water quality conditions in a water body based on determination of individual use supports. Use support determinations, which can be classified as monitored or evaluated, are based on:

- Data less than 5 years old (monitored)
- Data more than 5 years old (evaluated)
- Knowledge and experience of the area by technical staff (evaluated)
- Complaint investigation (monitored, if samples are collected)
- Other readily available Agencies' data (monitored)
- Readily available Volunteer Monitoring data (monitored, if certain quality assurance standards are met)

All readily available data are considered, including data from TDEC Environmental Field Offices, Tennessee Department of Health (Aquatic Biology Section of Laboratory Services), Tennessee Wildlife Resources Agency, National Park Service, Tennessee Valley Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Forest Service, universities and colleges, the regulated community, and the private sector.

The assessment is based on the degree of support of designated uses as measured by compliance with Tennessee's water quality standards.

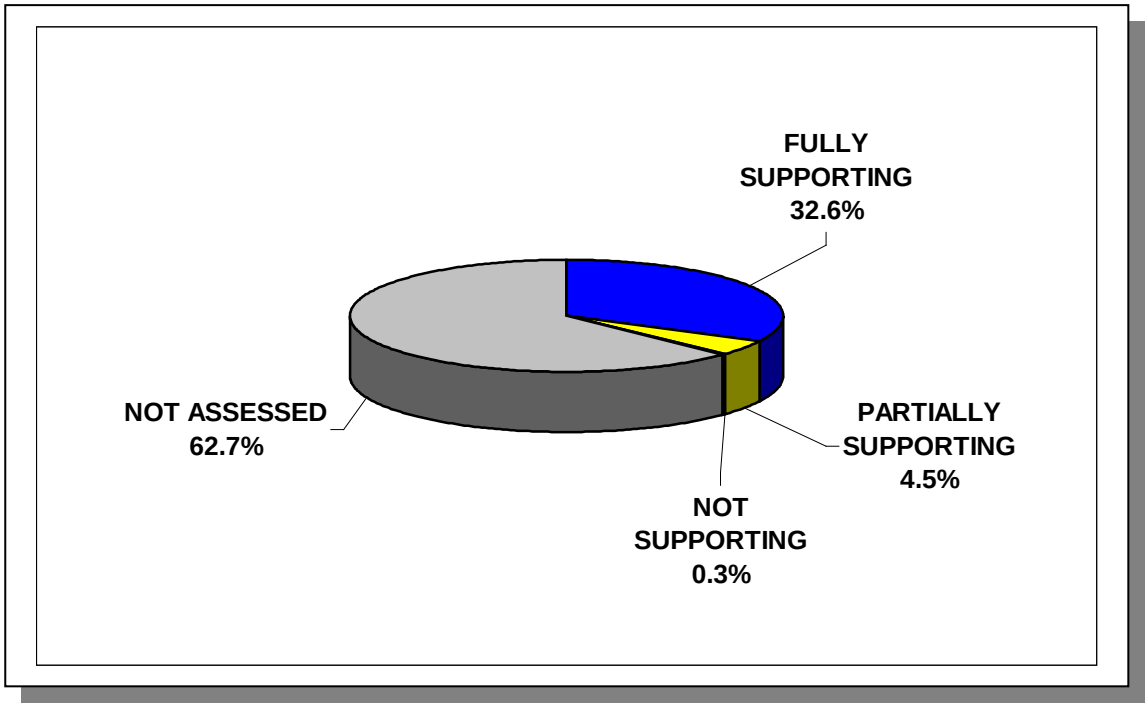


Figure 3-5a. Water Quality Assessment of Streams and Rivers in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the*

2002 Water Quality Assessment of 3,435.2 miles in the watershed. More information is provided in Appendix III.

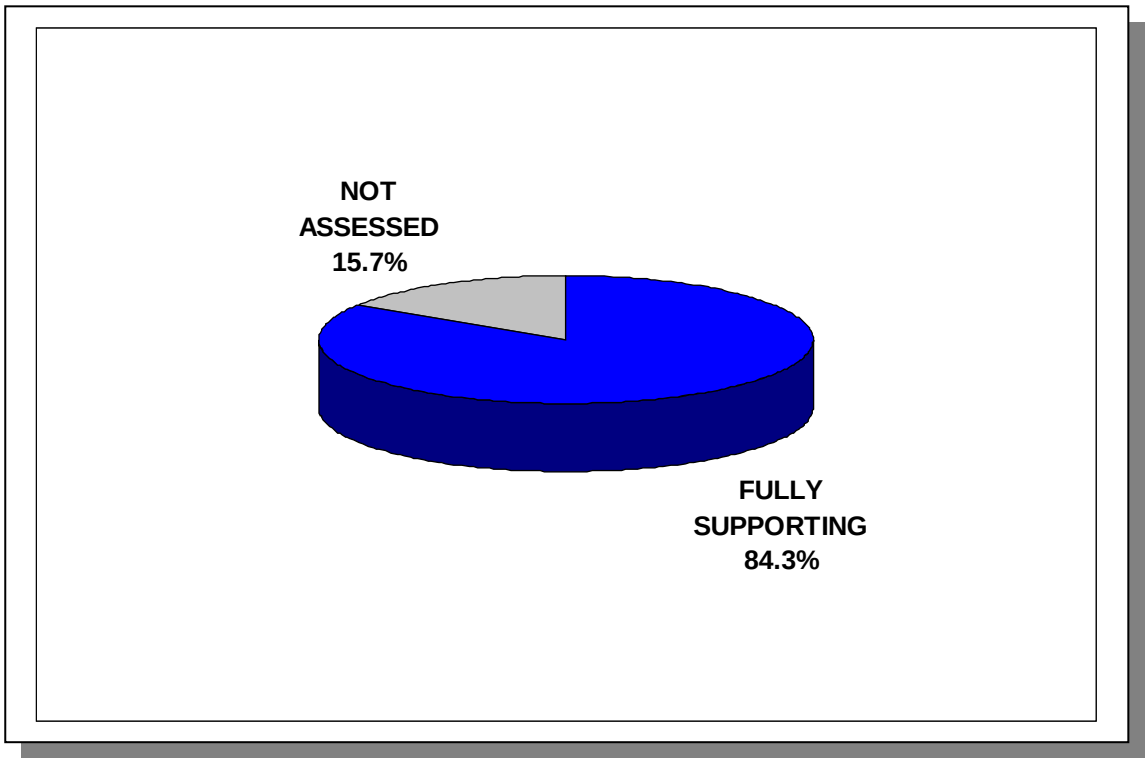


Figure 3-5b. Water Quality Assessment of Lakes in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment of 20,763 lake acres in the watershed. More information is provided in Appendix III.*

3.3.A. Assessment Summary.

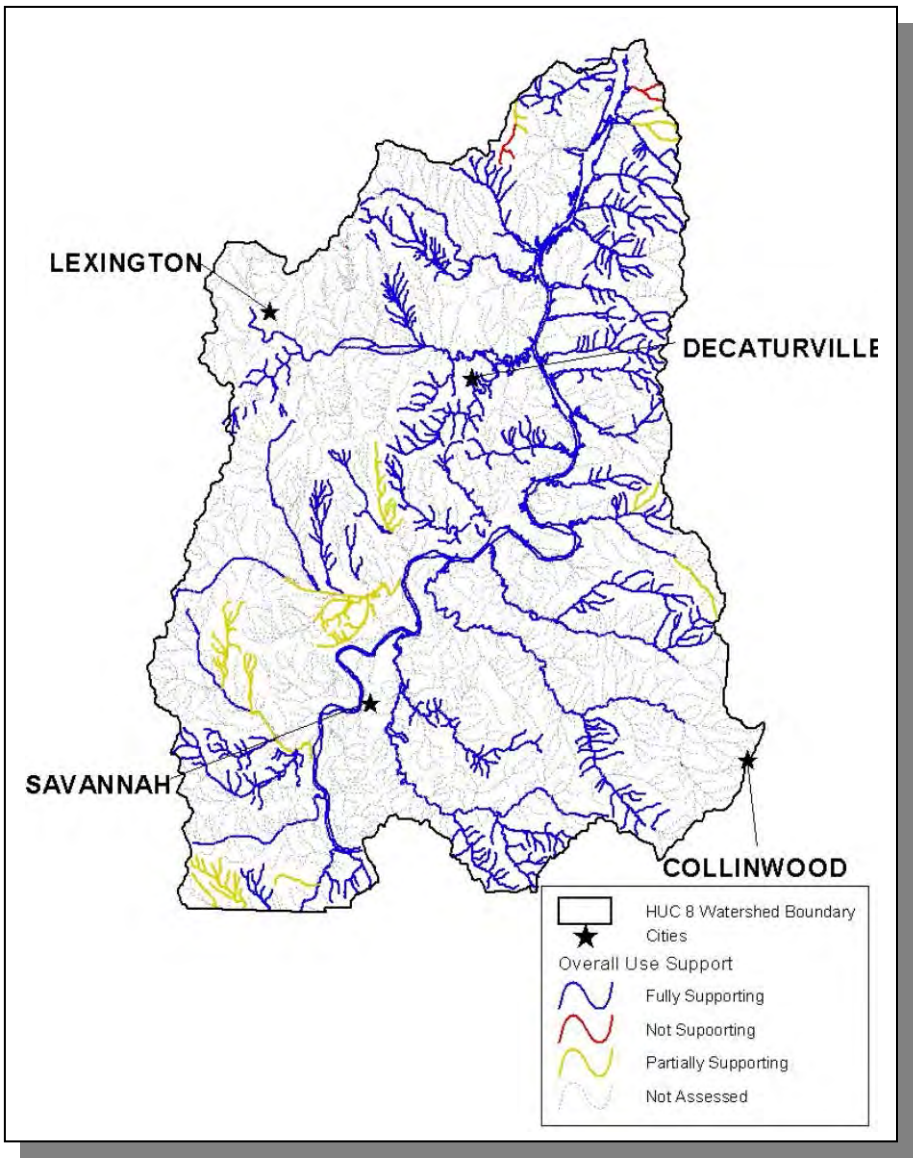


Figure 3-6a. Overall Use Support Attainment in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

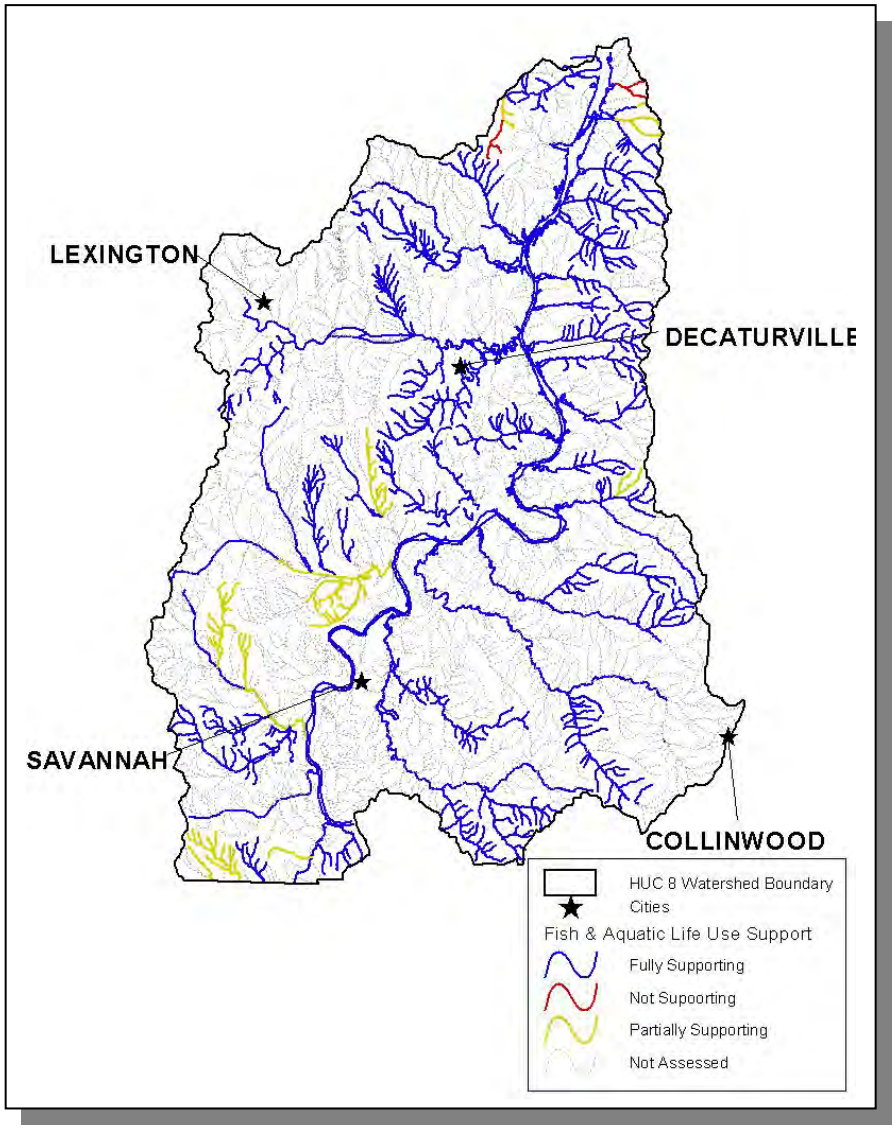


Figure 3-6b. Fish and Aquatic Life Use Support Attainment in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

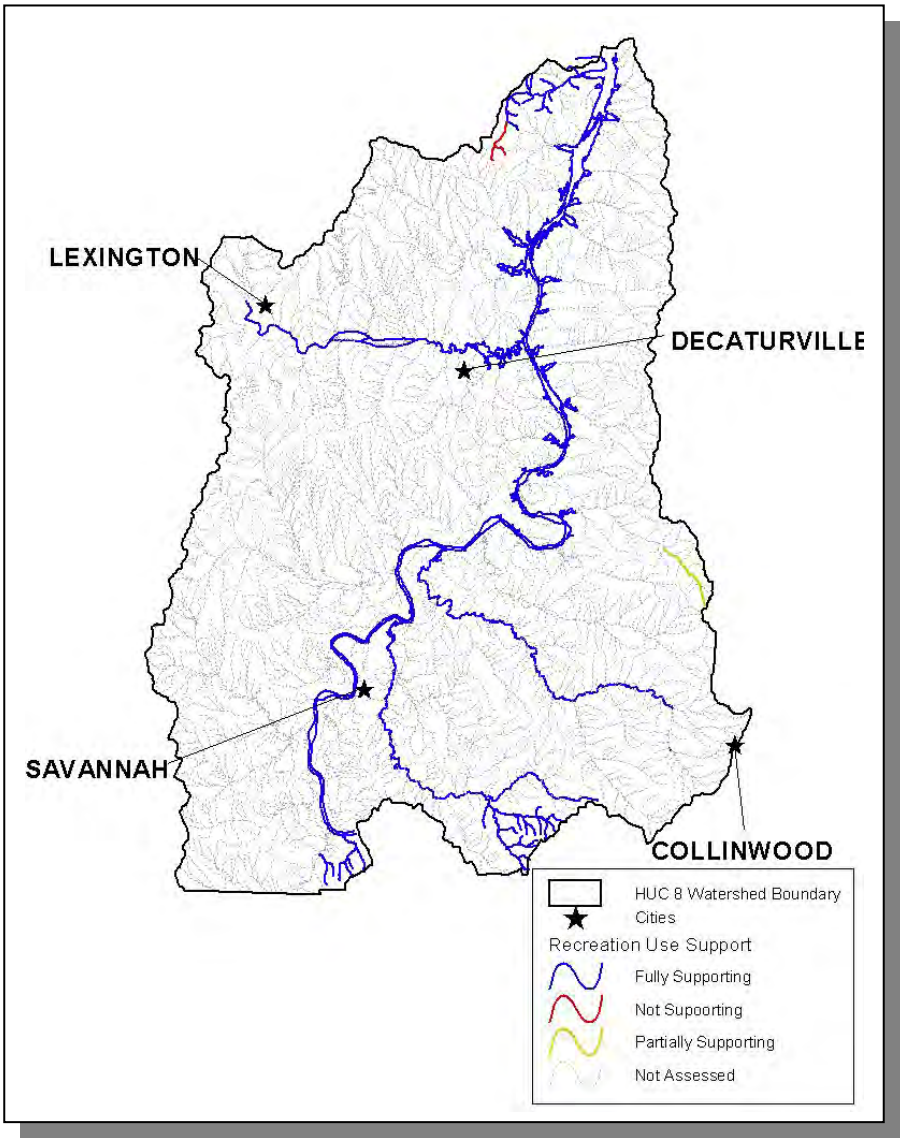


Figure 3-6c. Recreation Use Support Attainment in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

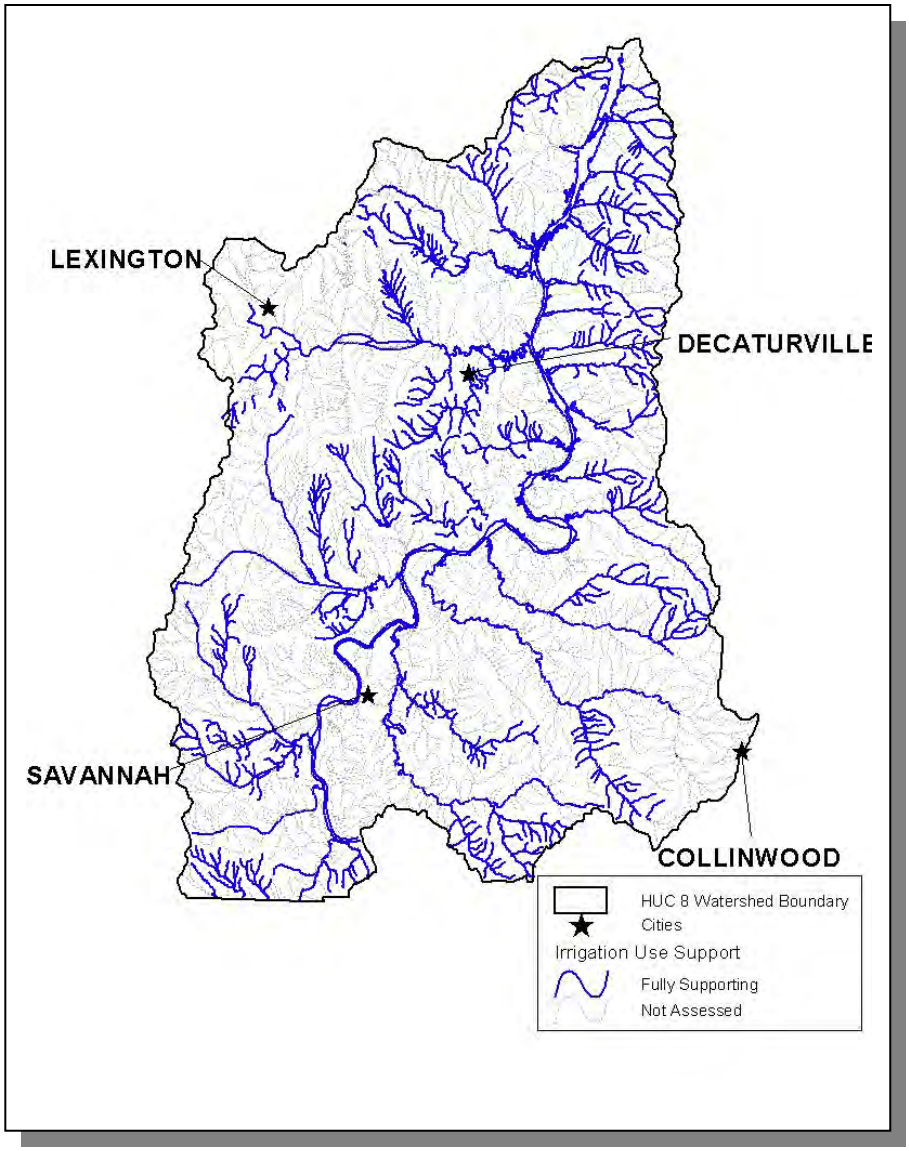


Figure 3-6d. Irrigation Use Support Attainment in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

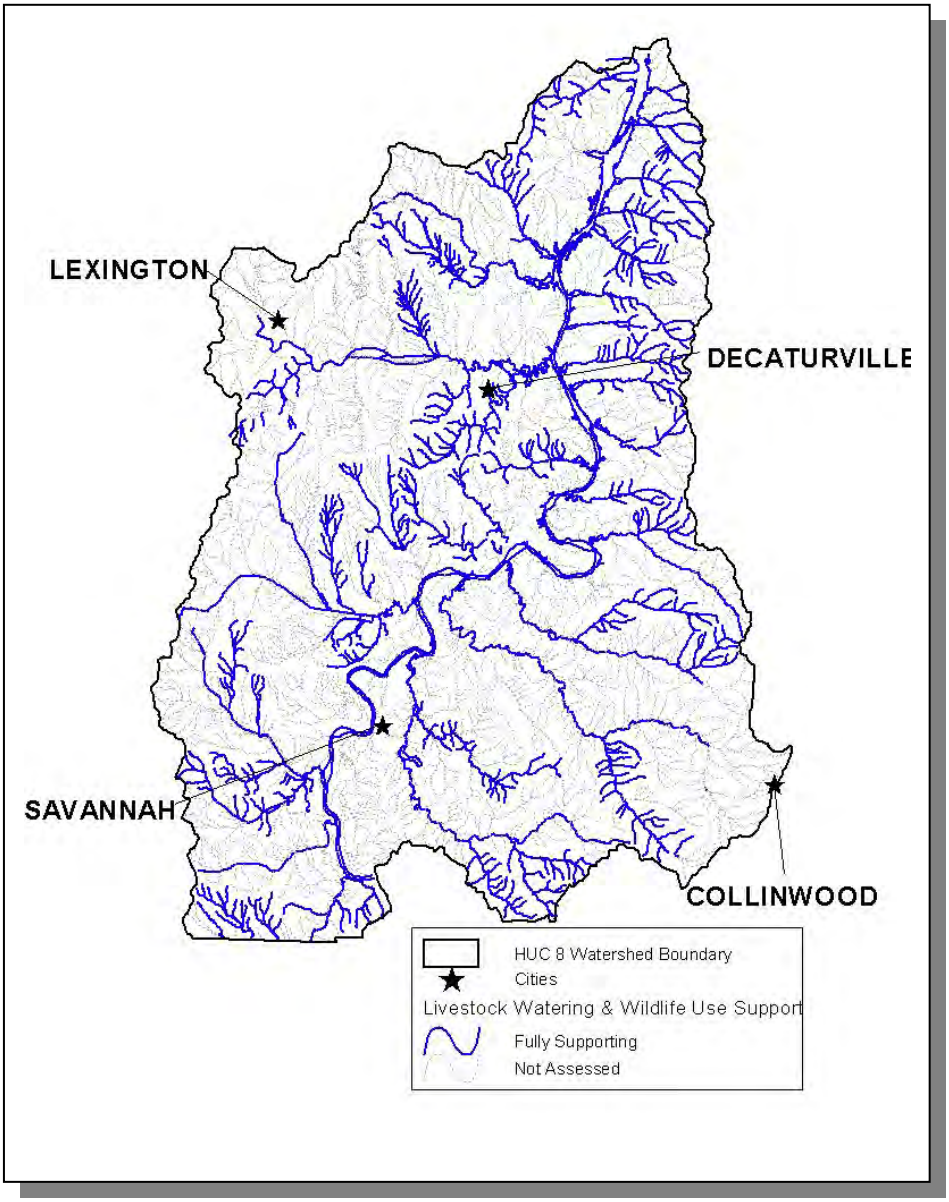


Figure 3-6e. Livestock Watering and Wildlife Use Support Attainment in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

3.3.B. Use Impairment Summary.

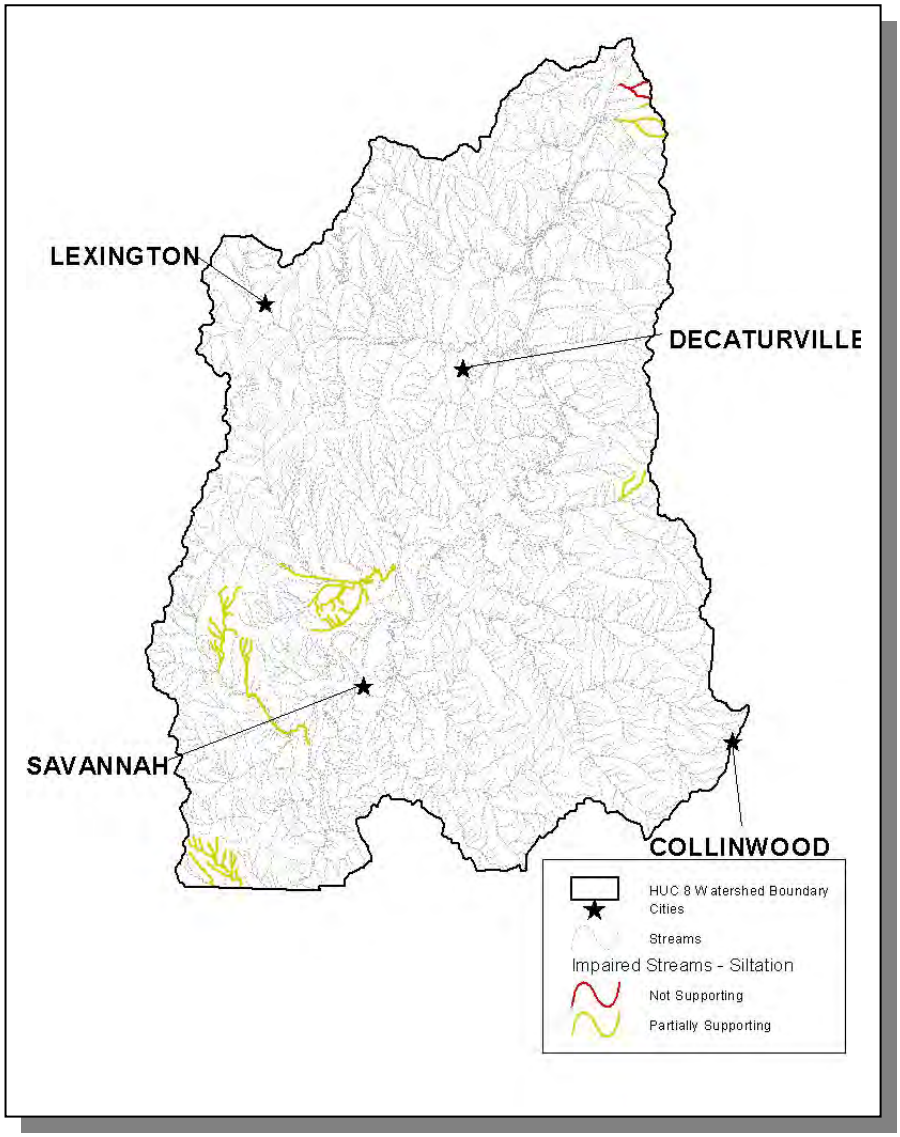


Figure 3-7a. Impaired Streams Due to Siltation in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

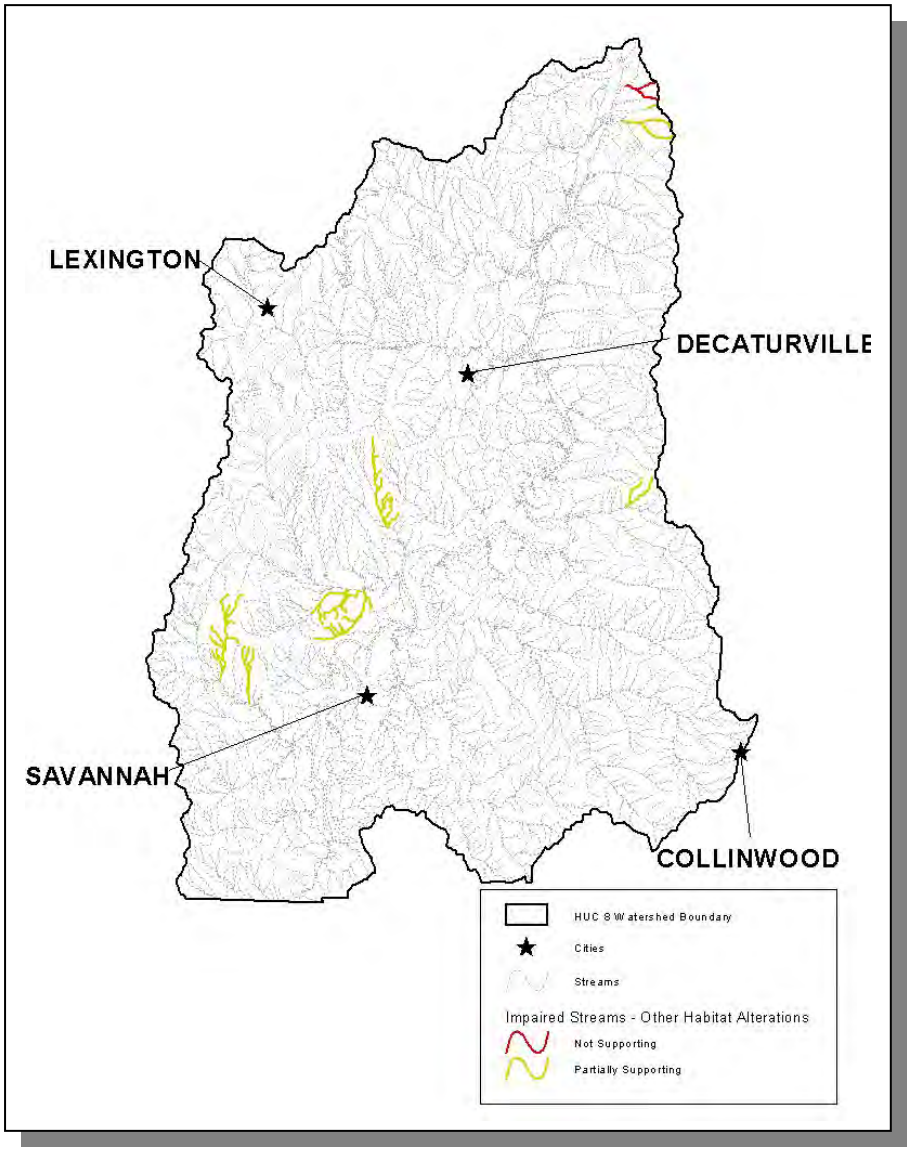


Figure 3-7b. Impaired Streams Due to Habitat Alteration in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

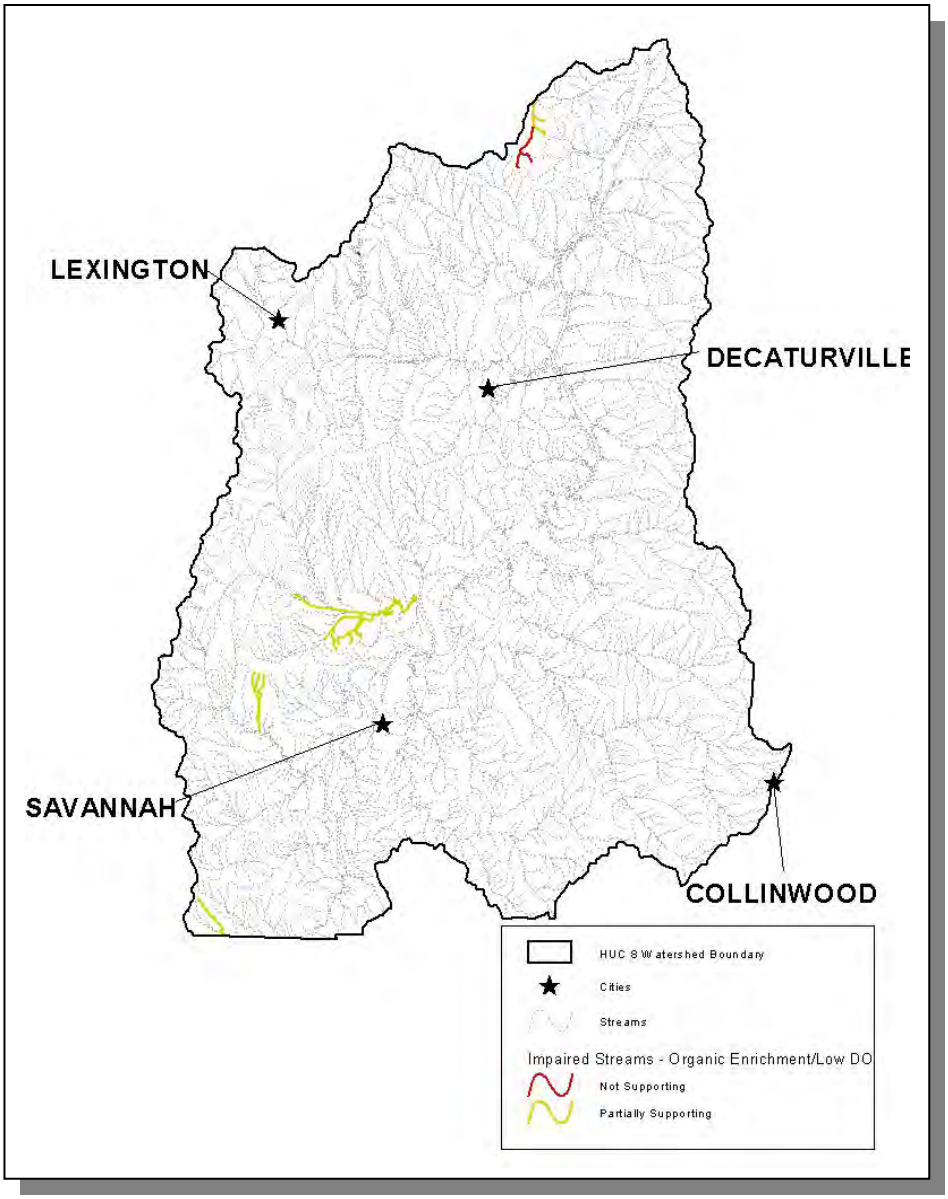


Figure 3-7c. Impaired Streams Due to Organic Enrichment or Low Dissolved Oxygen in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

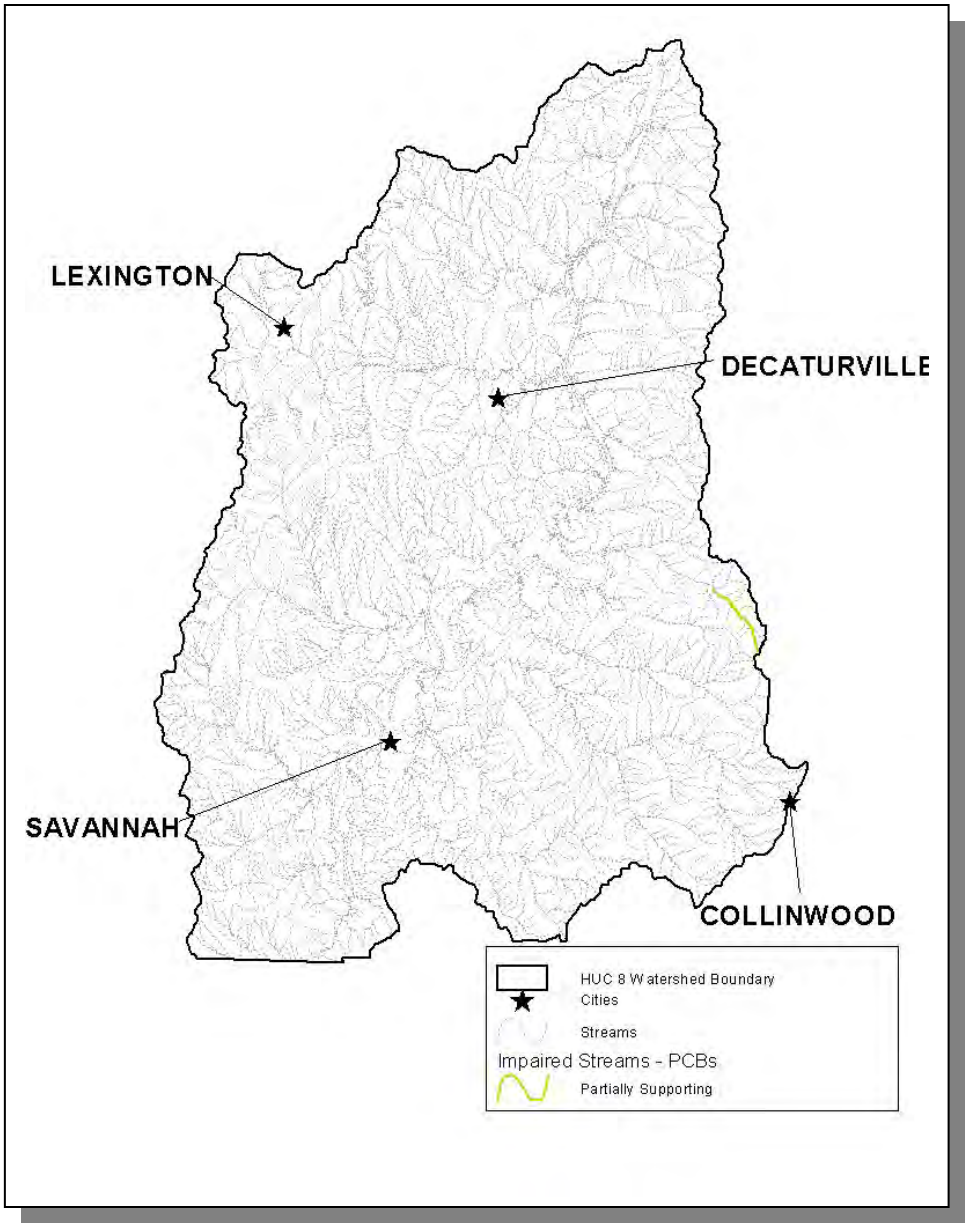


Figure 3-7d. Impaired Streams Due to Polychlorinated Biphenyls in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Assessment data are based on the 2002 Water Quality Assessment. Locations of Collinwood, Decaturville, Lexington, and Savannah are shown for reference. More information is provided in Appendix III.*

The listing of impaired waters that do not support designated uses (the 303(d) list) is traditionally submitted to EPA every two years. A copy of the most recent 303(d) list may be downloaded from: http://www.state.tn.us/environment/water.htm.

Since the year 2002, the 303(d) list is compiled by using EPA's ADB (Assessment Database) software developed by RTI (Research Triangle Institute). The ADB allows for a more detailed segmentation of waterbodies. While this results in a more accurate description of the status of water quality, it makes it difficult when comparing water quality assessments with and without using this tool. A more meaningful comparison will be between assessments conducted in Year 3 of each succeeding five-year cycle.

The ADB was used to create maps that illustrate water quality. These maps may be viewed on TDEC's homepage at http://www.state.tn.us/environment/water.htm,

CHAPTER 4

POINT AND NONPOINT SOURCE CHARACTERIZATION OF THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED

4.1. BACKGROUND. This chapter is organized by HUC-10 subwatershed, and the description of each subwatershed is divided into four parts:

i. General description of the subwatershed
ii. Description of point source contributions
ii.a. Description of facilities discharging to water bodies listed on the 2002 303(d) list
iii. Description of nonpoint source contributions

The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed (HUC 06040001) has been delineated into ten HUC 10-digit subwatersheds.

Information for this chapter was obtained from databases maintained by the Division of Water Pollution Control or provided in the WCS (Watershed Characterization System) data set. The WCS used was version 2.0 (developed by Tetra Tech, Inc for EPA Region 4) released in 2003.

WCS integrates with ArcView® v3.x and Spatial Analyst® v1.1 to analyze user-delineated (sub)watersheds based on hydrologically connected water bodies. Reports are generated by integrating WCS with Microsoft® Word. Land Use/Land Cover information from 1992 MRLC (Multi-Resolution Land Cover) data are calculated based on the proportion of county-based land use/land cover in user-delineated (sub)watersheds. Nonpoint source data in WCS are based on agricultural census data collected 1992–1998; nonpoint source data were reviewed by Tennessee NRCS staff.

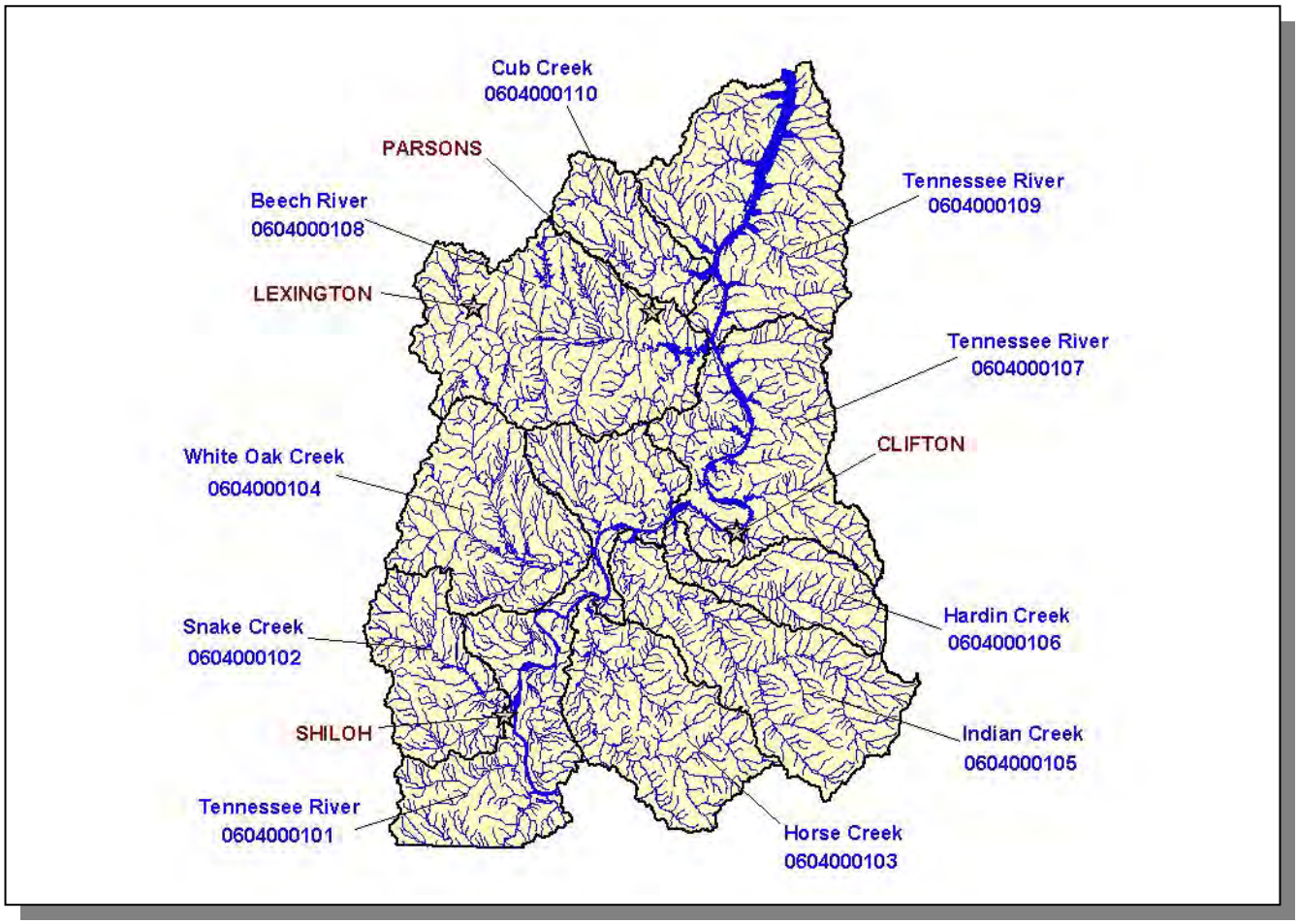


Figure 4-1. The Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed is Composed of Ten USGS-Delineated Subwatersheds (10-Digit Subwatersheds). *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

4.2. CHARACTERIZATION OF HUC-10 SUBWATERSHEDS. The Watershed Characterization System (WCS) software and data sets provided by EPA Region IV were used to characterize each subwatershed in the Tennessee Western Valley (Beech River) Watershed.

HUC-10	HUC-12	
0604000101	060400010101 (Tennessee River)	060400010105 (Doe Creek)
	060400010102 (Chambers Creek)	060400010106 (Stewman Creek)
	060400010103 (Lick Creek)	060400010107 (Turnbo Creek)
	060400010104 (Tennessee River)	
		060400010203 (Owl Creek)
0604000102	060400010201 (Upper Snake Creek)	
	060400010202 (Lower Snake Creek)	
0604000103	060400010301 (Upper Horse Creek)	060400010303 (Lower Horse Creek)
	060400010302 (Holland Creek)	
0604000104	060400010401 (Little White Oak Creek)	060400010403 (White Oak Creek)
	060400010402 (Middleton Creek)	
0604000105	060400010501 (Indian Creek)	060400010504 (Indian Creek)
	060400010502 (Indian Creek)	060400010505 (Indian Creek)
	060400010503 (Weatherford Creek)	
0604000106	060400010601 (Upper Hardin Creek)	060400010603 (Lower Hardin Creek)
	060400010602 (Middle Hardin Creek)	
0604000107	060400010701 (Tennessee River)	060400010703 (Tennessee River)
	060400010702 (Beech Creek)	060400010704 (Tennessee River)
0604000108	060400010801 (Beech River)	060400010805 (Big Creek)
	060400010802 (Piney Creek)	060400010806 (Beech River)
	060400010803 (Beech River)	060400010807 Beech River)
	060400010804 (Beech River)	
0604000109	060400010901 (Tennessee River)	060400010904 (Tennessee River)
	060400010902 (Tennessee River)	060400010905 (Tennessee River)
	060400010903 (Lick Creek)	060400010906 (Blue Creek)
0604000110	060400011001 (Cub Creek)	060400011002 (Sulpher Fork Cub Creek)

Table 4-1. HUC-12 Drainage Areas are Nested Within HUC-10 Drainages. *NRCS worked with USGS to delineate the HUC-10 and HUC-12 drainage boundaries.*

4.2.A. 0604000101 (Tennessee River).

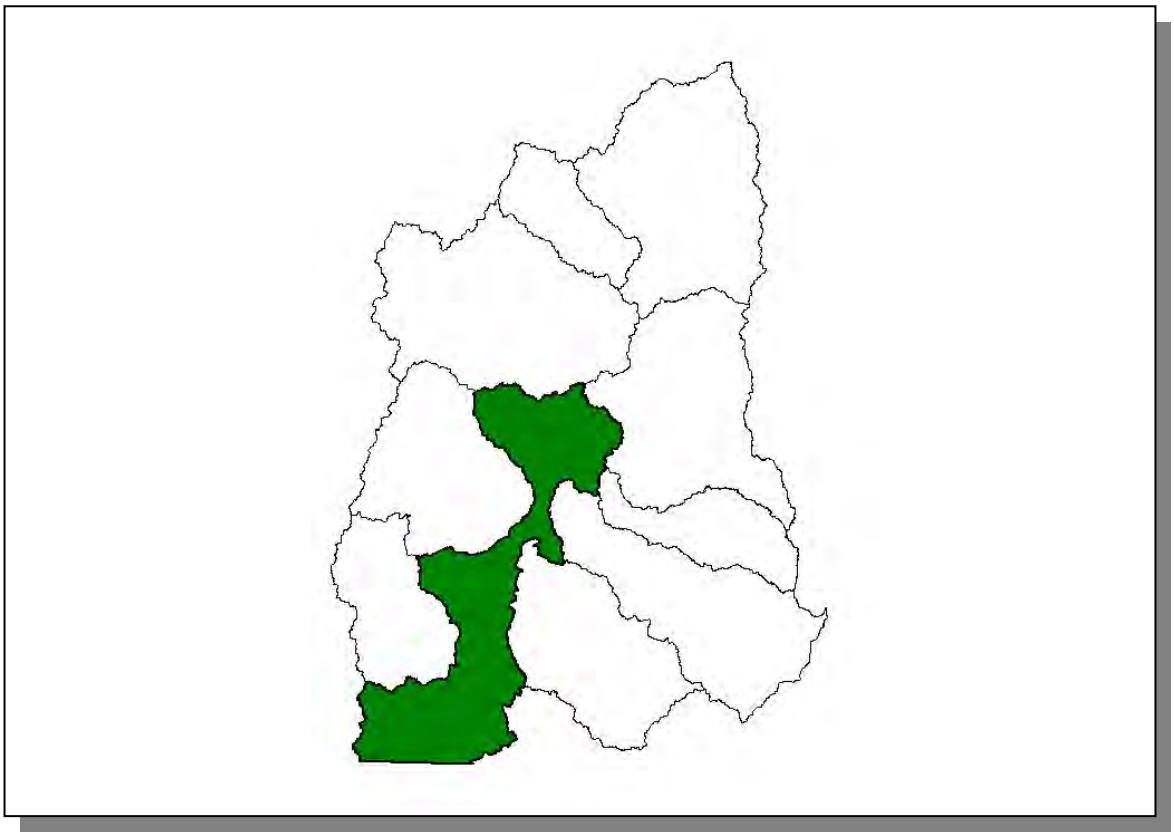


Figure 4-2. Location of Subwatershed 0604000101. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries are shown for reference.*

4.2.A.i. General Description.

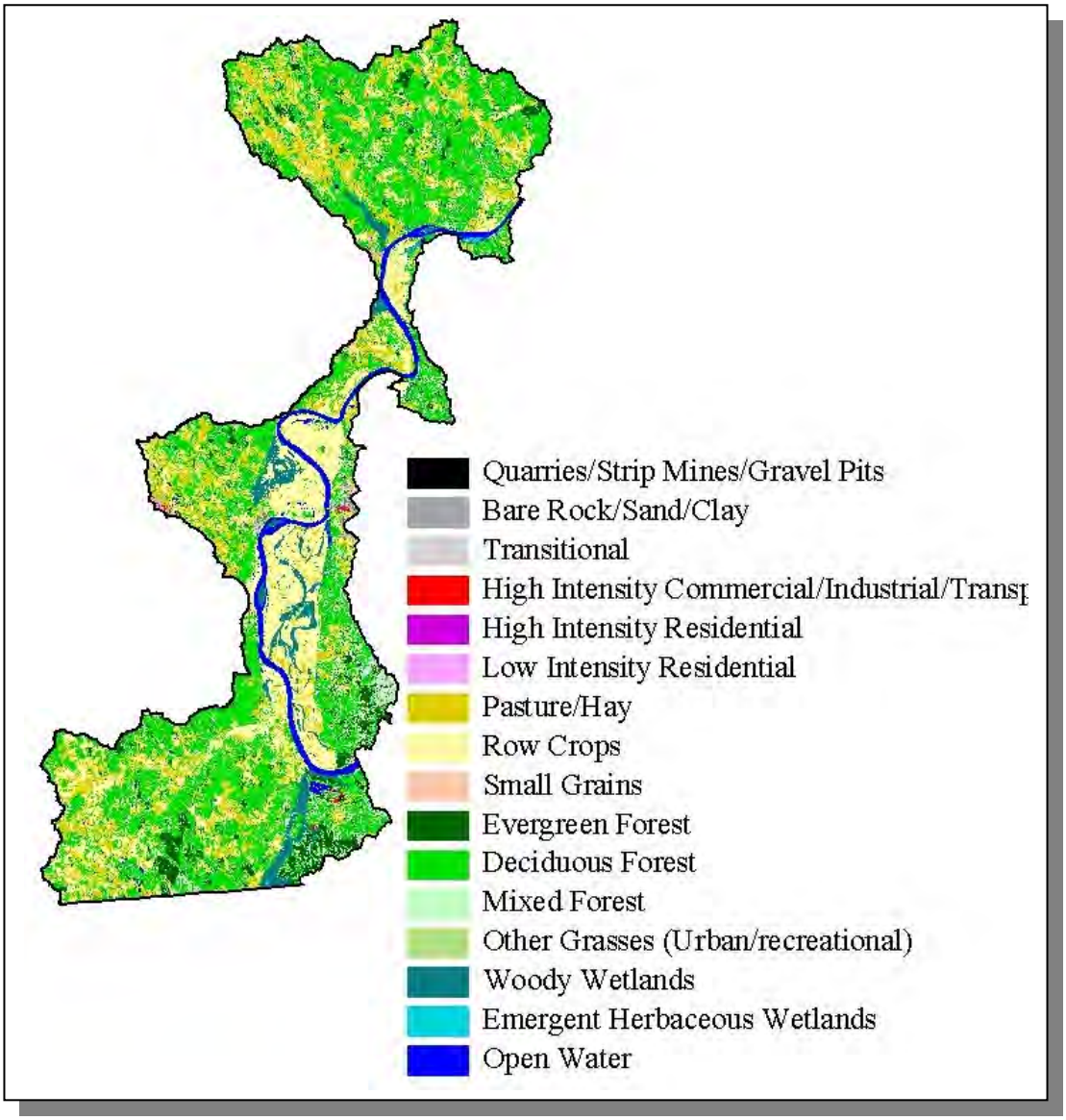


Figure 4-3. Illustration of Land Use Distribution in Subwatershed 0604000101.

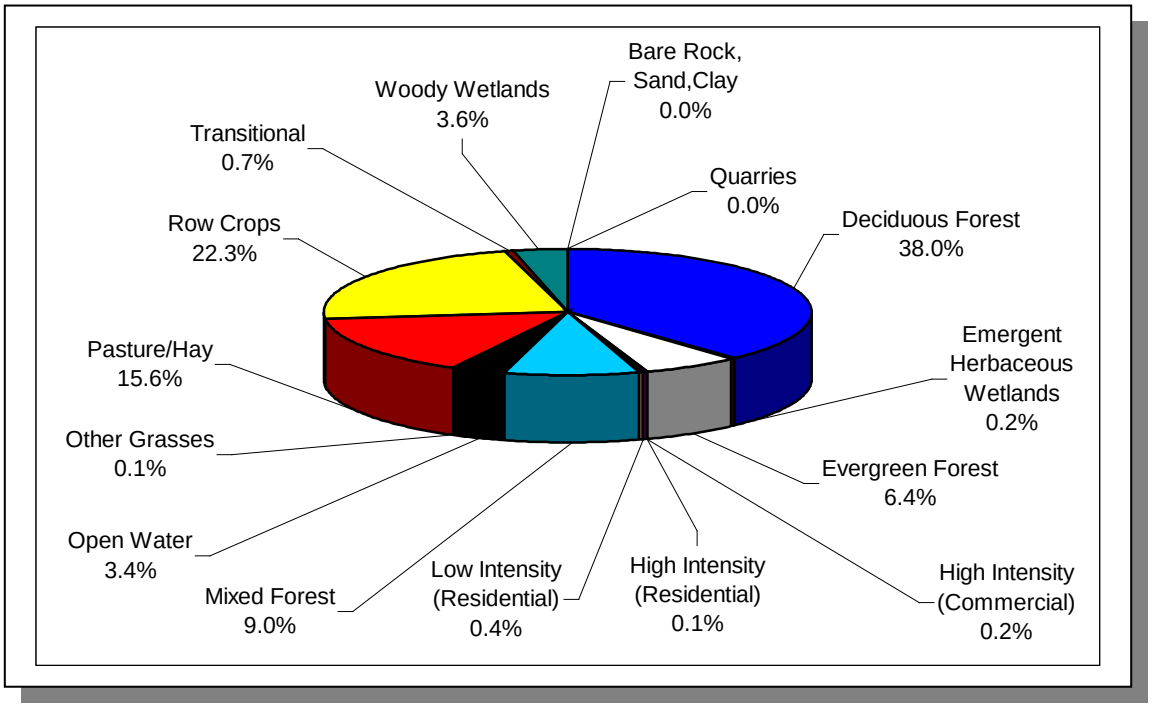


Figure 4-4. Land Use Distribution in Subwatershed 0604000101. *More information is provided in Appendix IV.*

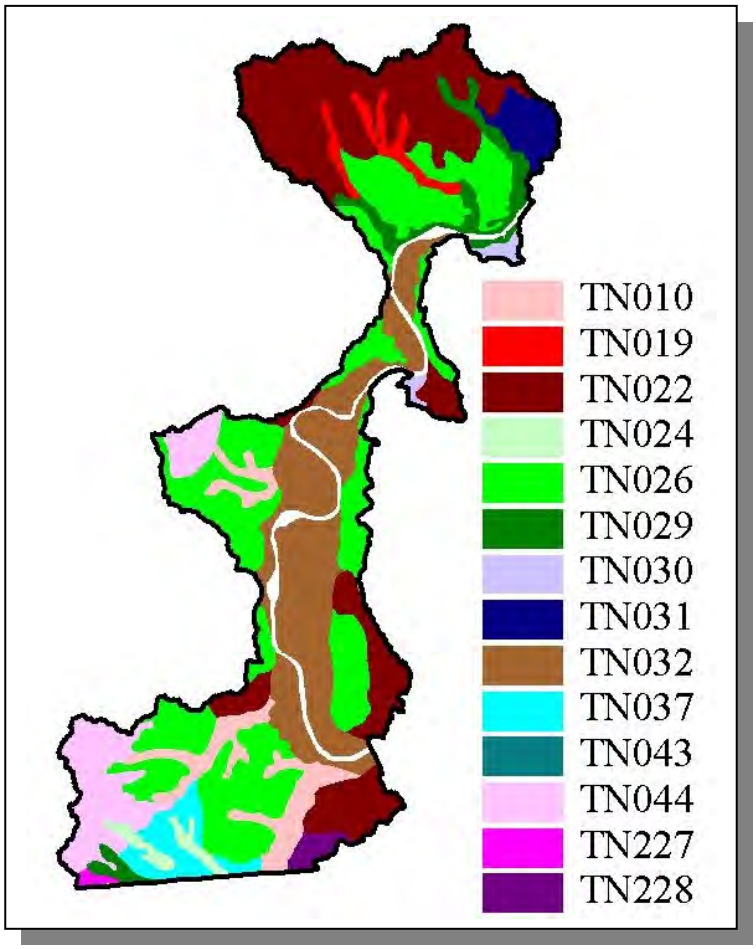


Figure 4-5. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000101.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN019	62.00	C	1.54	4.76	Loam	0.26
TN022	5.00	C	1.98	5.07	Loam	0.37
TN024	61.00	D	2.18	5.35	Loam	0.29
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN029	8.00	C	2.96	5.40	Loam	0.33
TN030	2.00	B	1.84	5.06	Loam	0.33
TN031	0.00	C	3.27	4.88	Loam	0.33
TN032	19.00	C	1.21	5.51	Silty Loam	0.37
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN043	0.00	C	2.70	5.02	Loam	0.30
TN044	0.00	C	1.48	5.32	Silty Loam	0.42
TN227	0.00	C	2.41	5.03	Silty Loam	0.38
TN228	1.00	B	3.32	5.09	Sandy Loam	0.28

Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000101. *More details are provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Henderson	21,844	24,000	25,522	3.72	812	892	949	16.9
McNairy	22,422	23,678	24,653	7.97	1,788	1,888	1,966	10.0
Totals	**77,371**	**83,293**	**87,484**		**10,892**	**11,746**	**12,266**	**12.6**

Table 4-3. Population Estimates in Subwatershed 0604000101.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Adamsville	McNairy	1,745	764	606	154	4
Crump	Hardin	2,006	951	67	873	11
Michie	McNairy	709	309	2	300	7
Sardis	Henderson	315	159	8	151	0
Scotts Hill	Henderson	611	297	12	278	7
Saltillo	Hardin	377	232	13	194	25
Savannah	Hardin	6,569	2,782	2,719	63	0
Totals		**12,352**	**2,712**	**3,427**	**2,013**	**54**

Table 4-4. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000101.

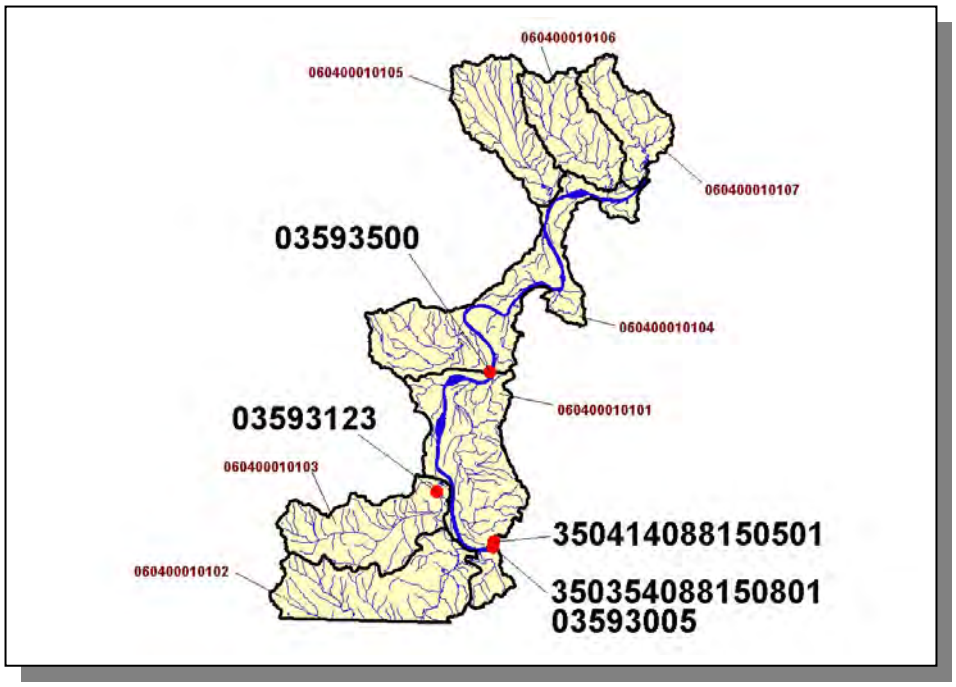


Figure 4-6. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010105, 060400010106 and 060400010107 boundaries are shown for reference. More information is provided in Appendix IV.*

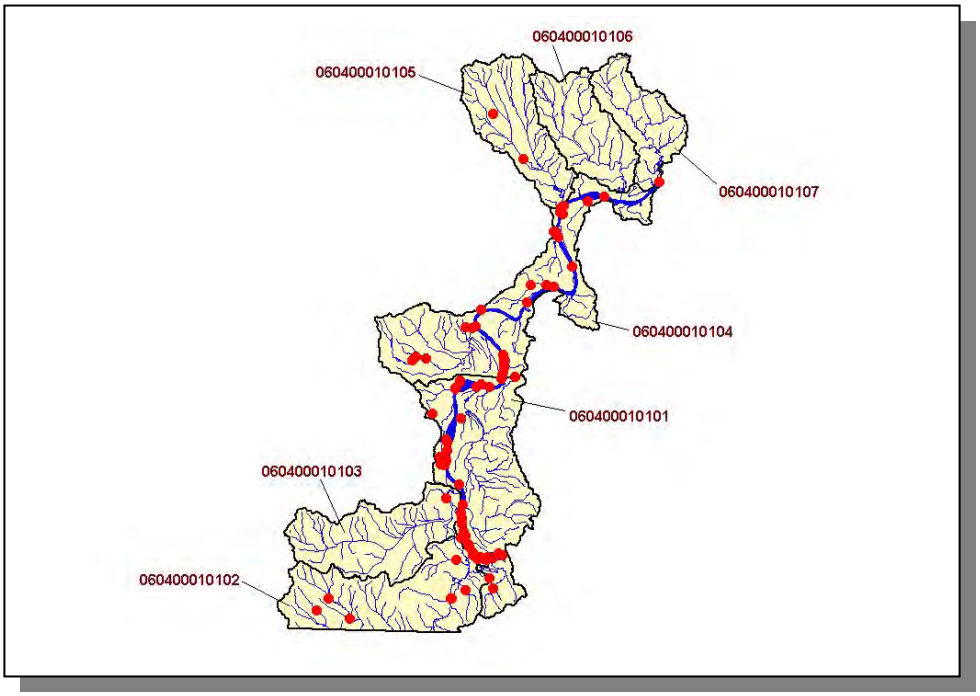


Figure 4-7. Location of STORET Monitoring Sites in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010105, 060400010106 and 060400010107 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.A.ii Point Source Contributions.

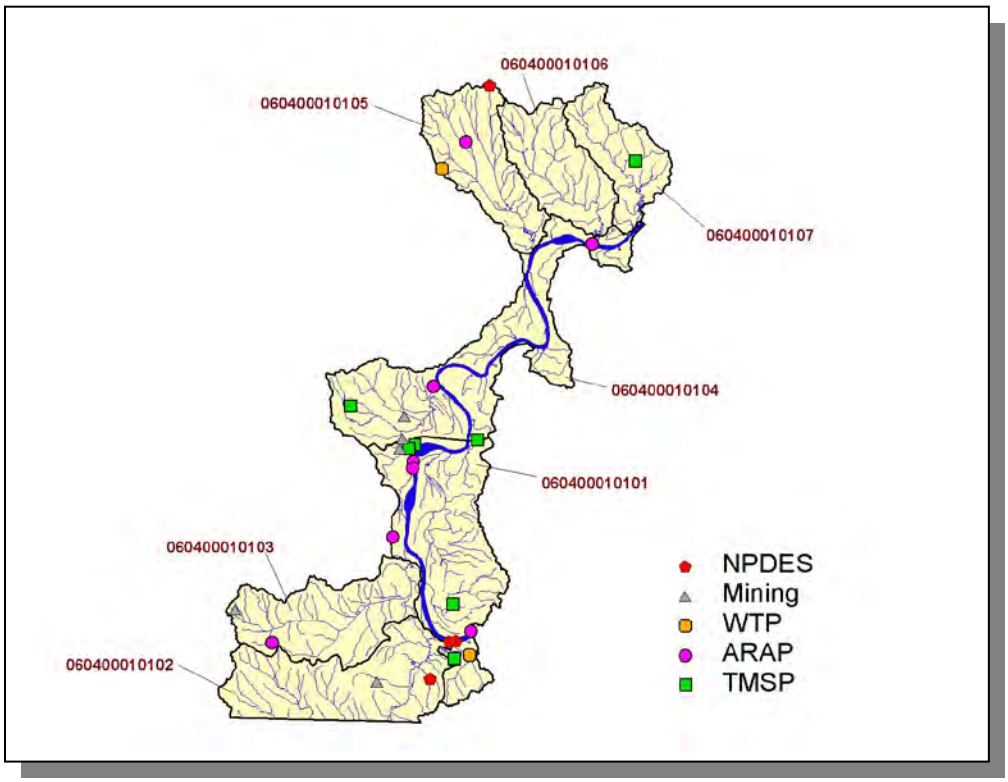


Figure 4-8. Location of Active Point Source Facilities in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

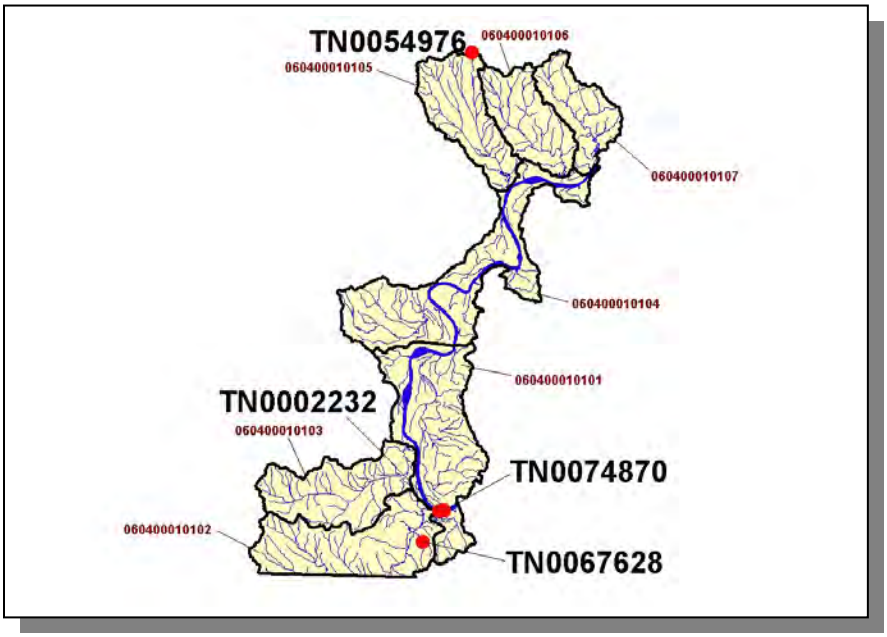


Figure 4-9. Location of NPDES Facilities in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

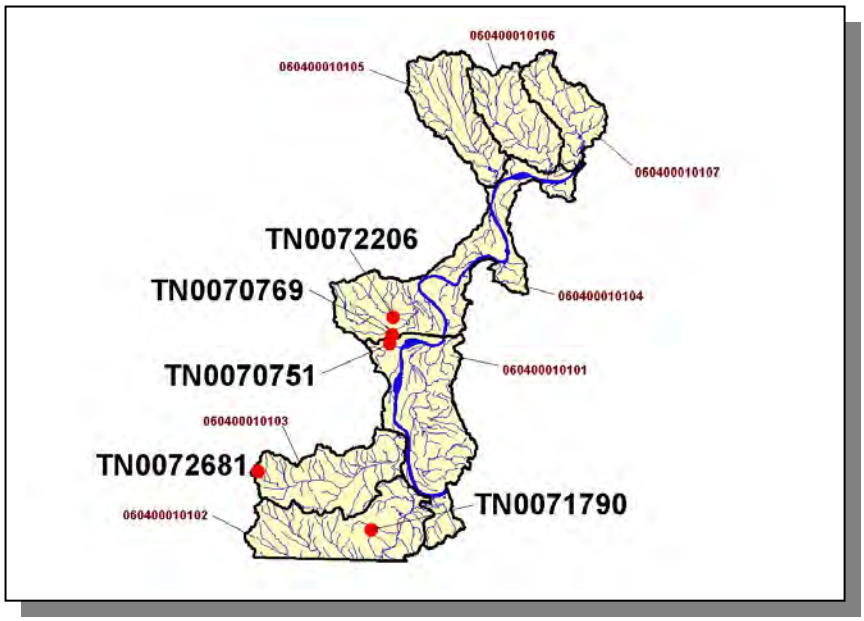


Figure 4-10. Location of Active Mining Facilities in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

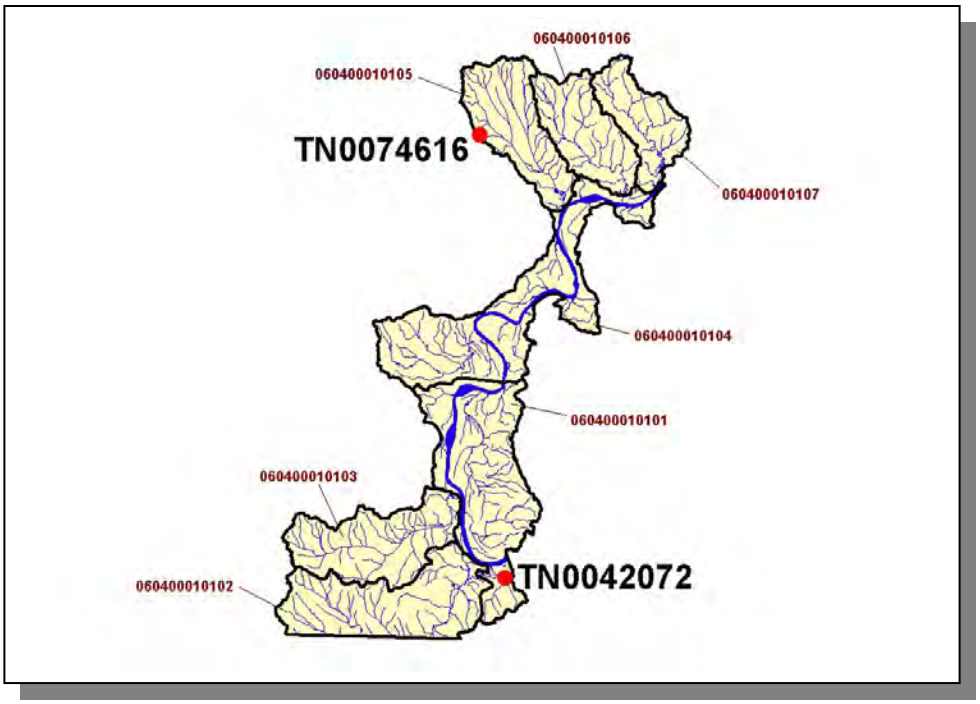


Figure 4-11. Location of Water Treatment Plants in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

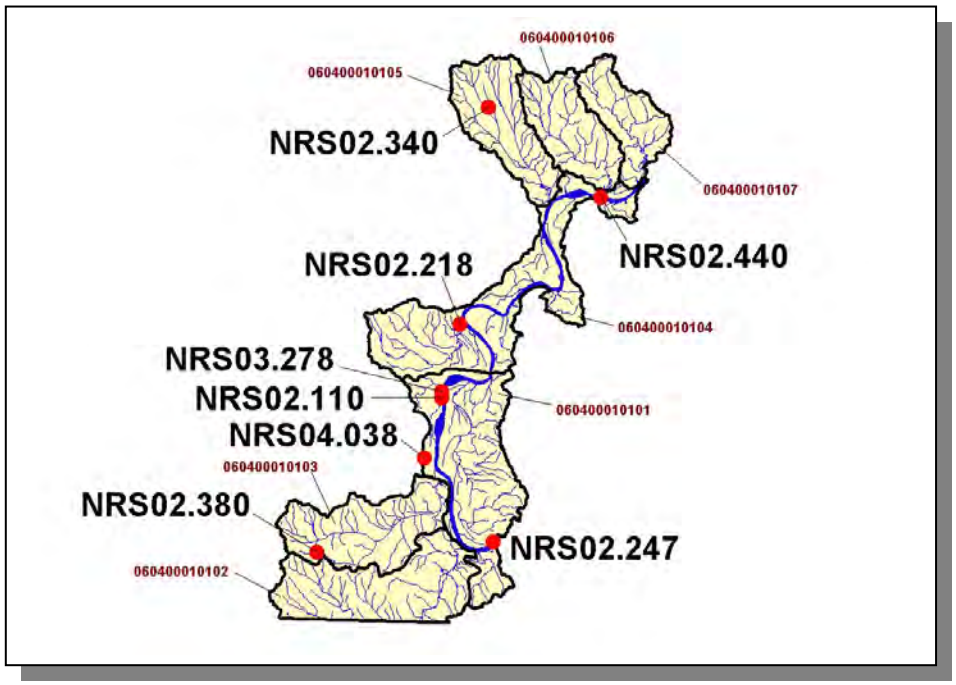


Figure 4-12. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

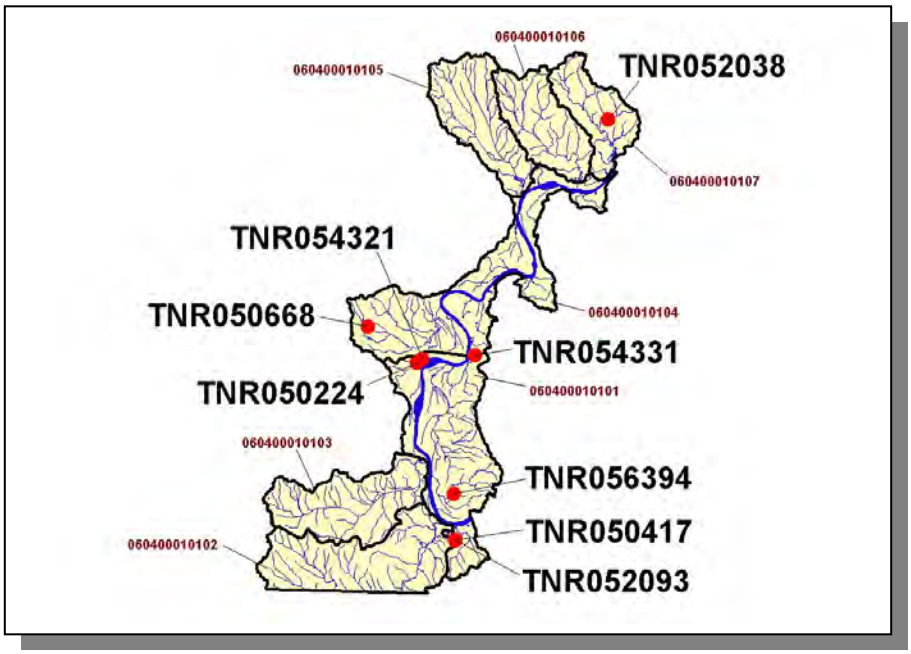


Figure 4-13. Location of TMSP Facilities in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.A.ii.a. Dischargers to Water Bodies Listed on the 2002 303(d) List

There are two NPDES facilities discharging to water bodies listed on the 2002 303(d) list in Subwatershed 0604000101:

- TN0054976 (Scotts Hill School STP) discharges to East Prong Doe Creek @ RM 7.7
- TN0067628 (Maverick Tube Corporation) discharges to Ditch to Battle Branch @ RM 2.2 to Chambers Creek @ RM 5.5

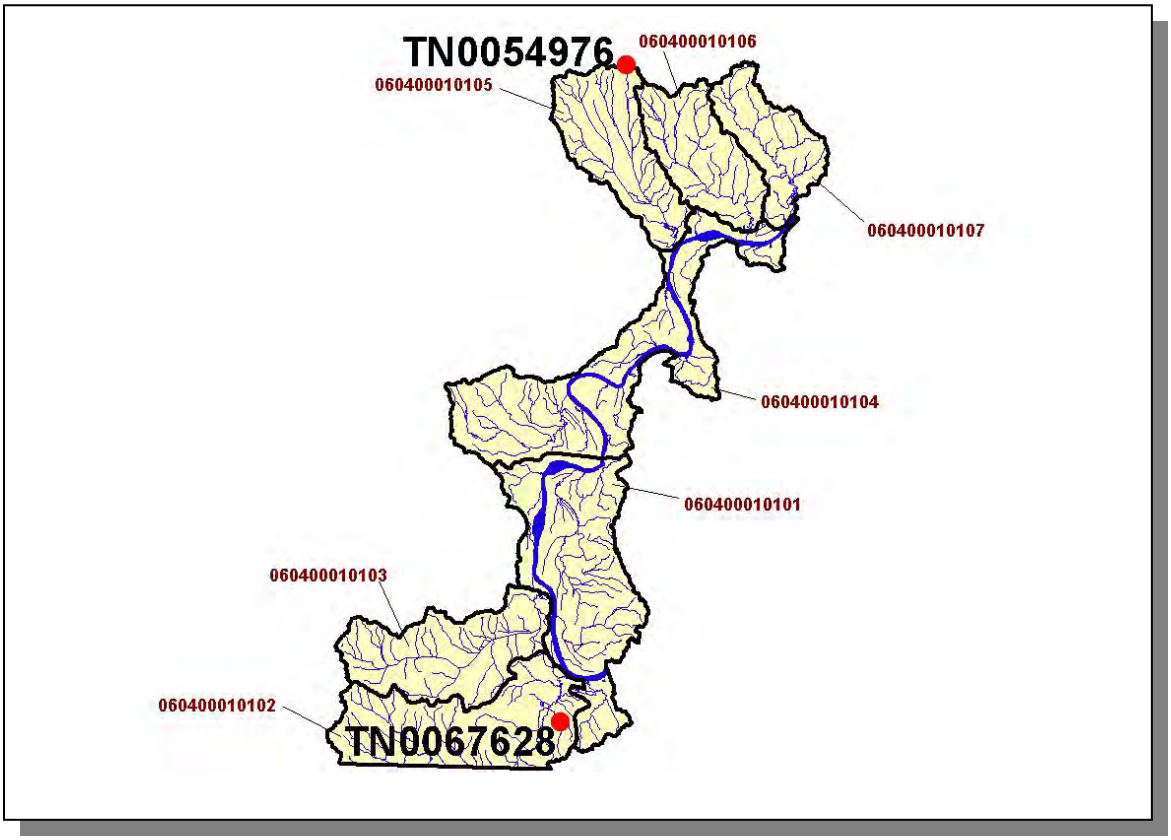


Figure 4-14. Location of NPDES Dischargers to Water Bodies Listed on the 2002 303(d) List in Subwatershed 0604000101. *Subwatershed 060400010101, 060400010102, 060400010103, 060400010104, 060400010105, 060400010106, and 060400010107 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0054976			0		
TN0067628					

Table 4-5. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000101. *Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.*

PERMIT #	TSS	pH	OIL and GREASE
TN0067628	X	X	X

Table 4-6. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000101.

PERMIT #	$CBOD_5$	FECAL COLIFORM	*E. COLI*	NH_3	TRC	TSS	SETTLEABLE SOLIDS	DO	pH
TN0054976	X	X	X	X	X	X	X	X	X

Table 4-7. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000101. *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.*

4.2.A.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
5,229	10,150	12	14	<5	4,098	73

Table 4-8. Summary of Livestock Count Estimates in Subwatershed 0604000101. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6
Henderson	158.5	158.5	3.6	12.8
Total	**378.4**	**378.4**	**10.1**	**40.4**

Table 4-9. Forest Acreage and Annual Removal Rates (1987-1994) in Subwatershed 0604000101.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.41
Grass (Pastureland)	0.41
Grass (Hayland)	0.22
Legumes (Hayland)	0.32
Legumes, Grass (Hayland)	0.38
Grass, Forbs, Legumes (Mixed Pasture)	0.61
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.99
Cotton (Row Crops)	3.65
Sorghum (Row Crops)	2.48
Soybeans (Row Crops)	10.46
Wheat (Close-Grown Cropland)	3.44
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	7.09
Conservation Reserve Program Lands	0.33
Non-Agricultural Land Use	0.00
Other Land in Farms	0.43
Farmsteads and Ranch Headquarters	0.30

Table 4-10. Annual Estimated Total Soil Loss in Subwatershed 0604000101.

4.2.B. 0604000102 (Snake Creek).

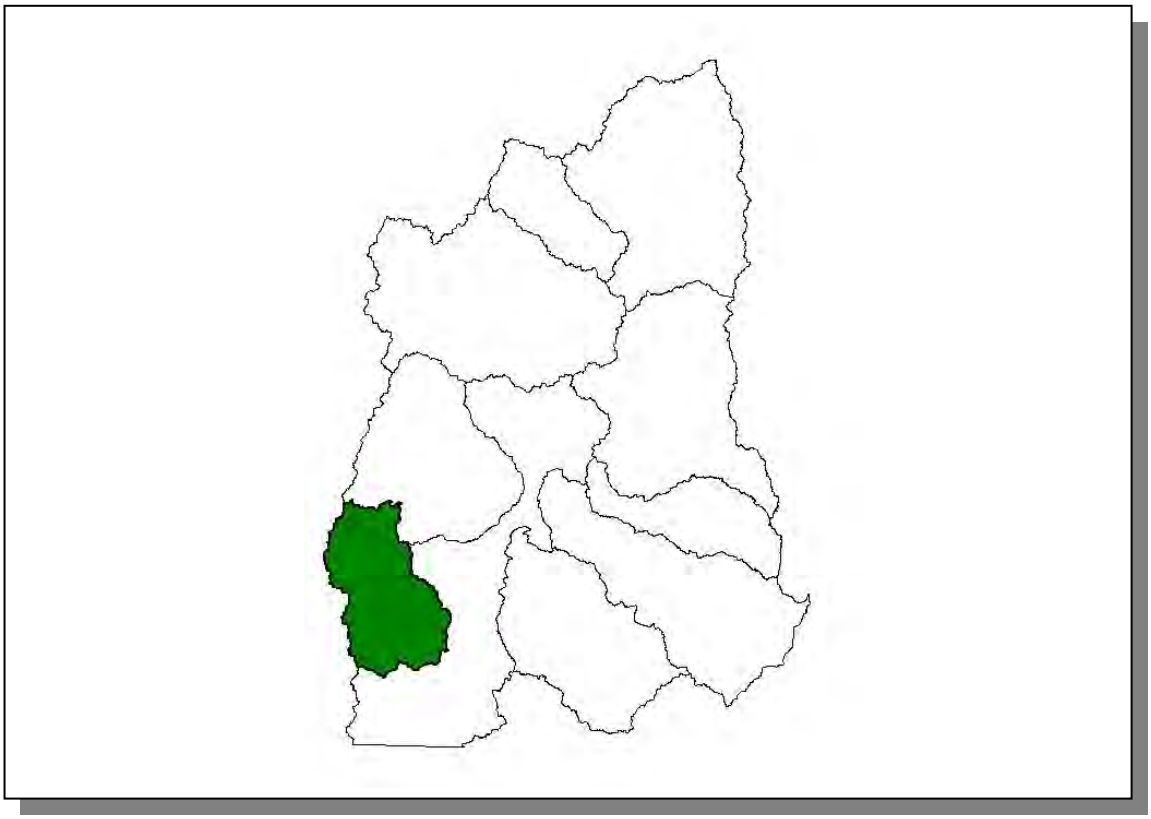


Figure 4-15. Location of Subwatershed 0604000102. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.B.i. General Description.

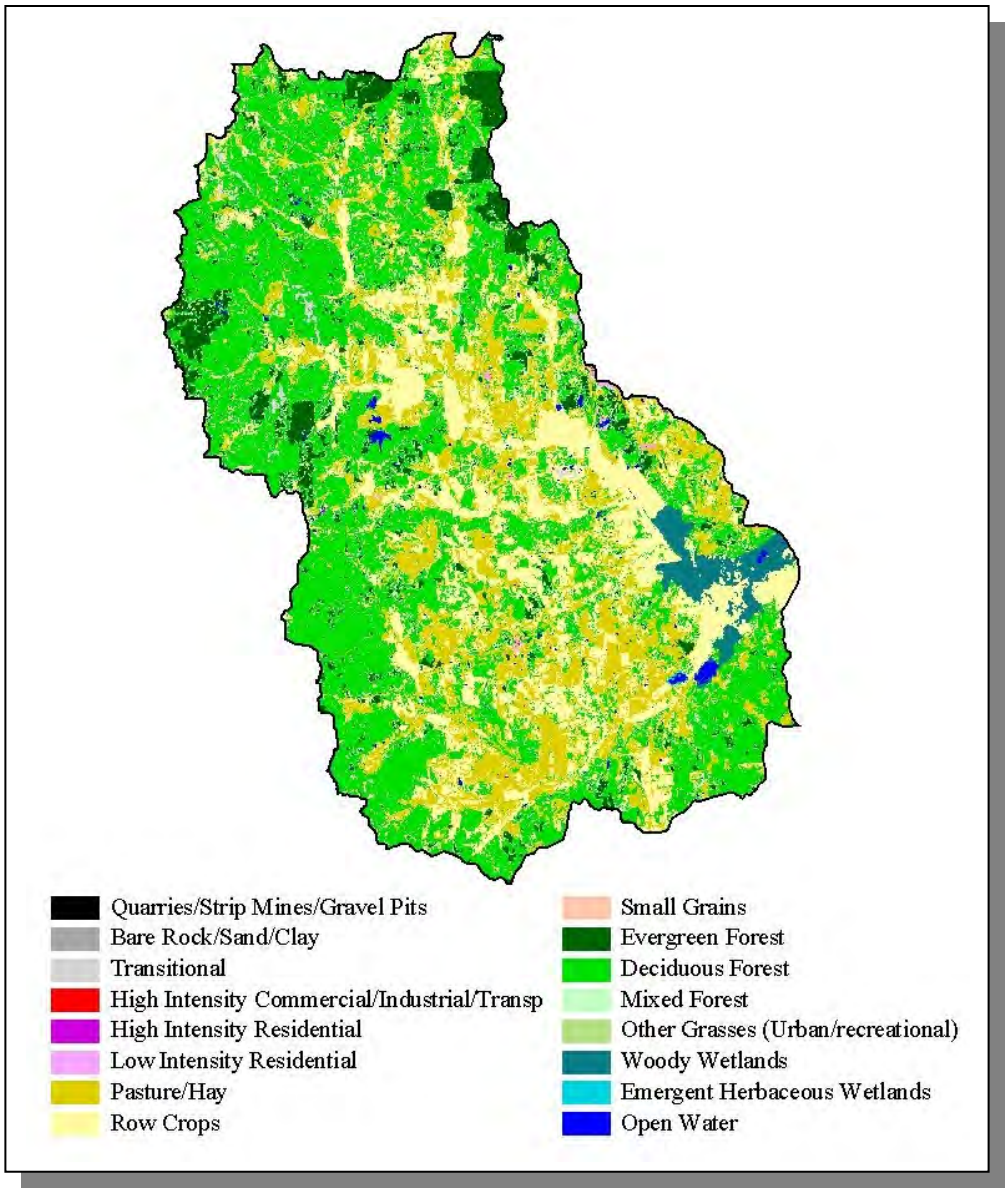


Figure 4-16. Illustration of Land Use Distribution in Subwatershed 0604000102.

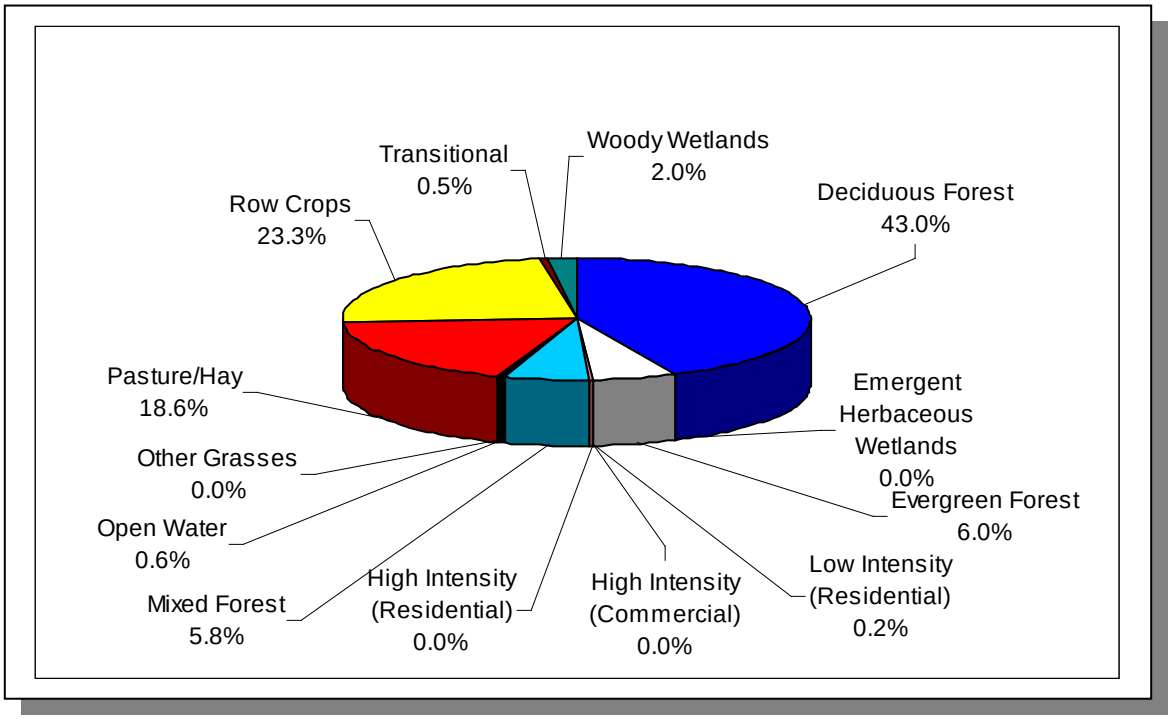


Figure 4-17. Land Use Distribution in Subwatershed 0604000102. *More information is provided in Appendix IV.*

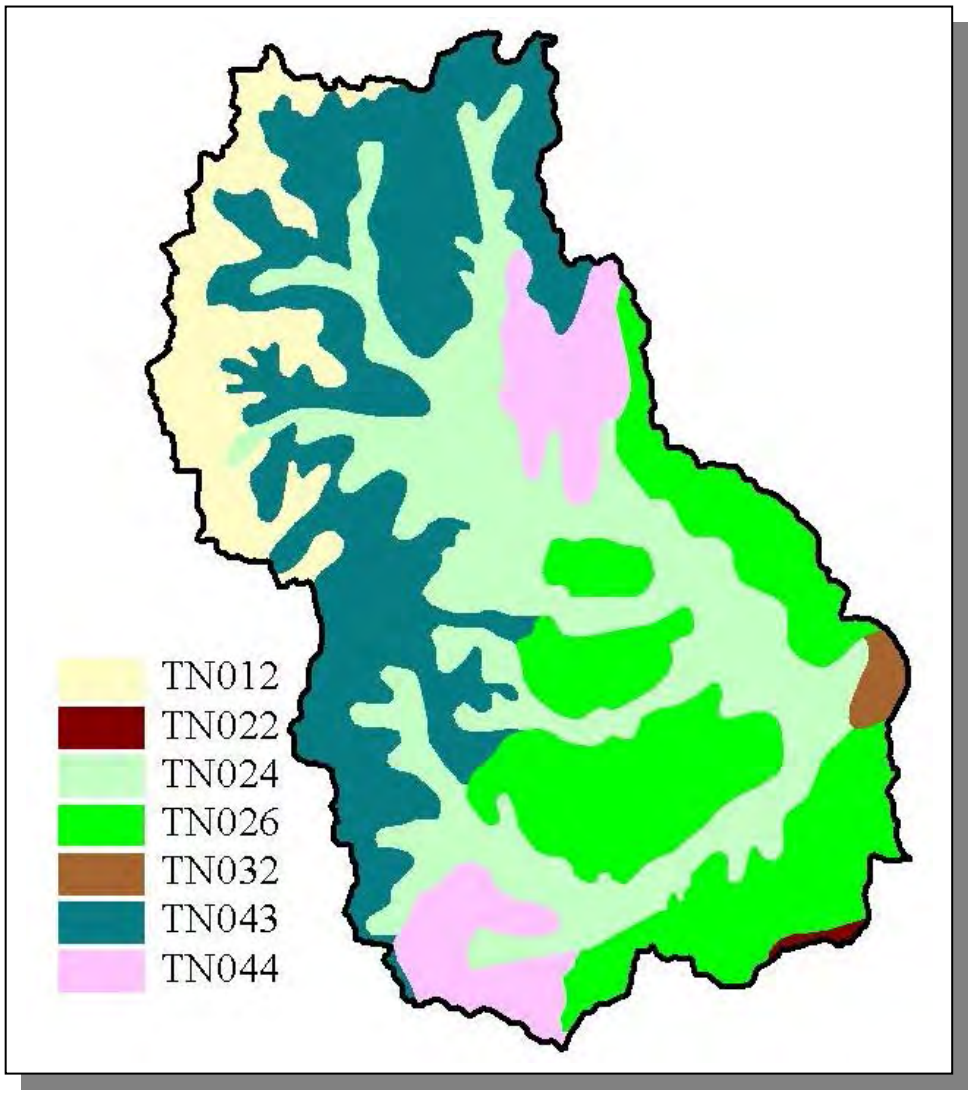


Figure 4-18. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000102.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN022	5.00	C	1.98	5.07	Loam	0.37
TN024	61.00	D	2.18	5.35	Loam	0.29
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN032	19.00	C	1.21	5.51	Silty Loam	0.37
TN043	0.00	C	2.70	5.02	Loam	0.30
TN044	0.00	C	1.48	5.32	Silty Loam	0.42

Table 4-11. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000102. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Hardin	22,633	24,816	25,578	2.78	630	691	712	13.0
McNairy	22,422	23,678	24,653	19,93	4,469	4,719	4,914	10.0
Totals	**45,055**	**48,494**	**50,231**		**5,099**	**5,410**	**5,626**	**10.3**

Table 4-12. Population Estimates in Subwatershed 0604000102.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Adamsville	McNairy	1,745	764	606	154	4

Table 4-13. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000102.

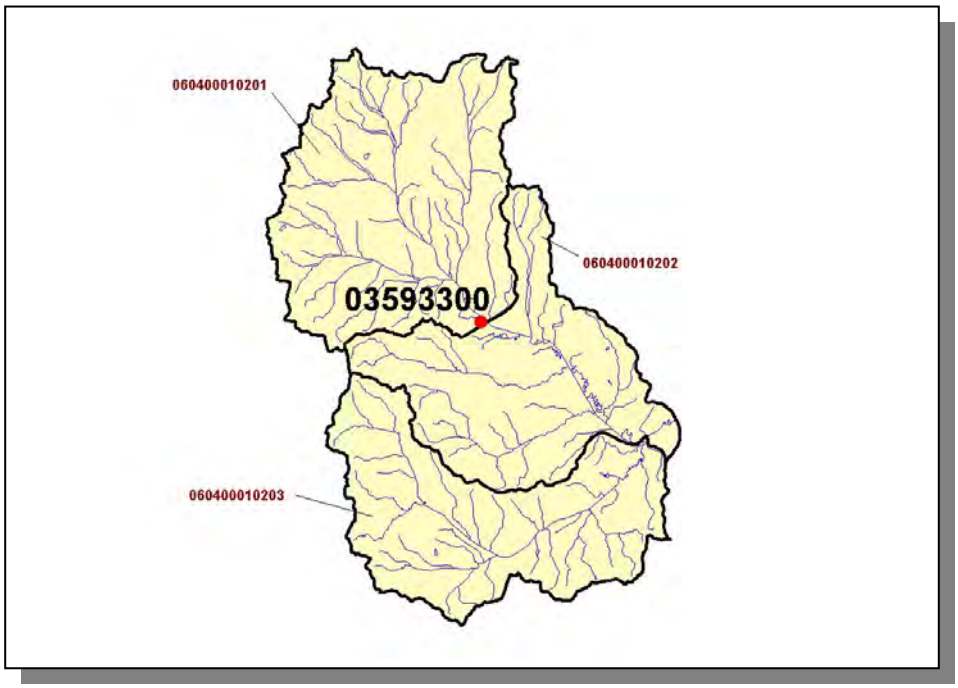


Figure 4-19. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information is provided in Appendix IV.*

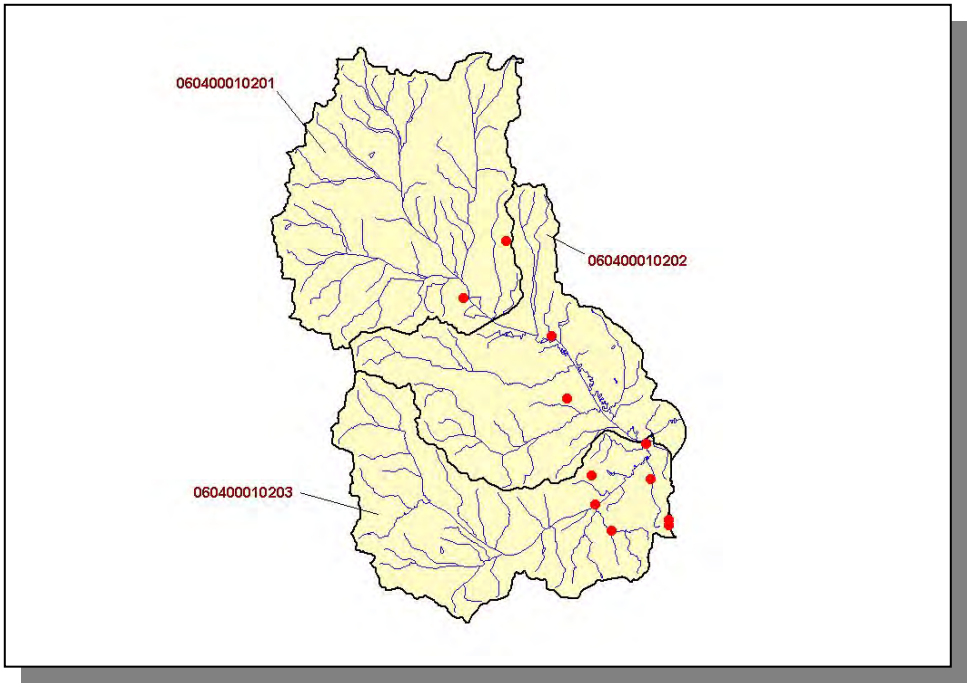


Figure 4-20. Location of STORET Monitoring Sites in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.B.ii. Point Source Contributions.

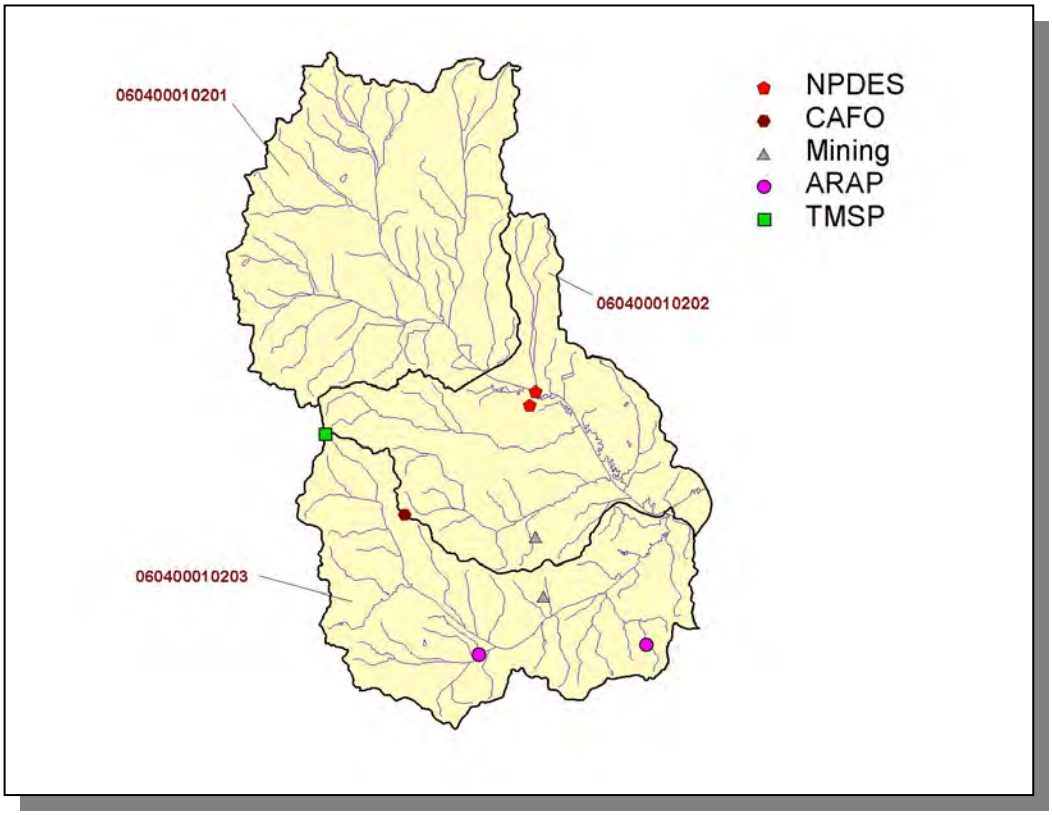


Figure 4-21. Location of Active Point Source Facilities in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

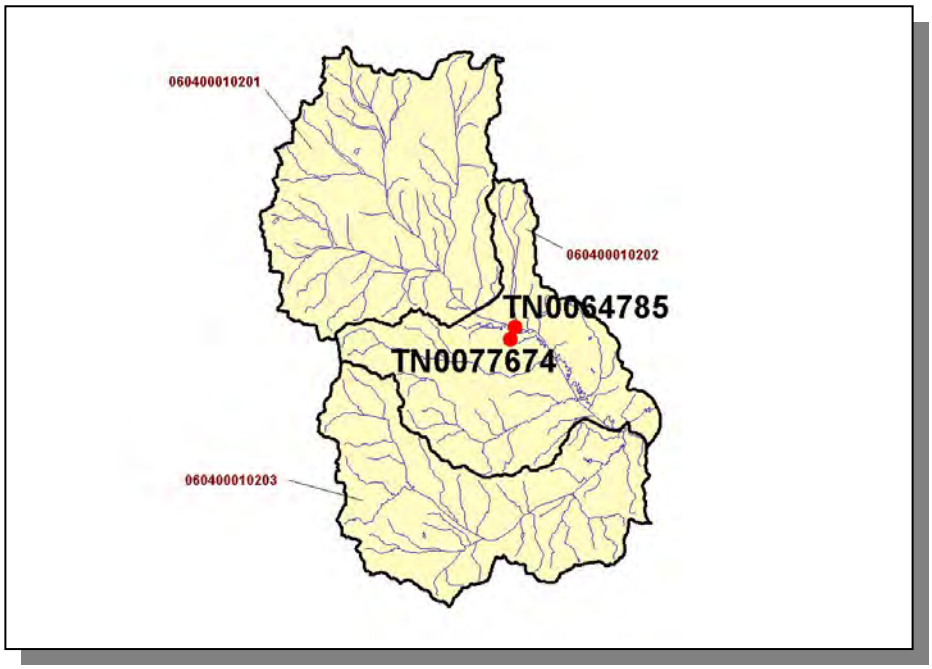


Figure 4-22. Location of NPDES Facilities in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-23. Location of Concentrated Animal Feeding Operations (CAFO) in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

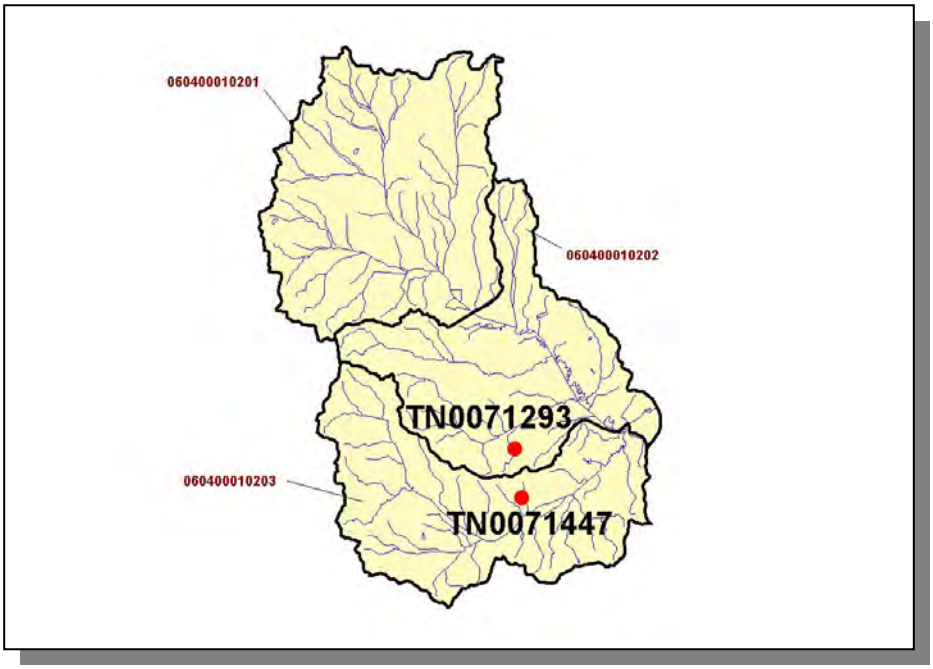


Figure 4-24. Location of Active Mining Facilities in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

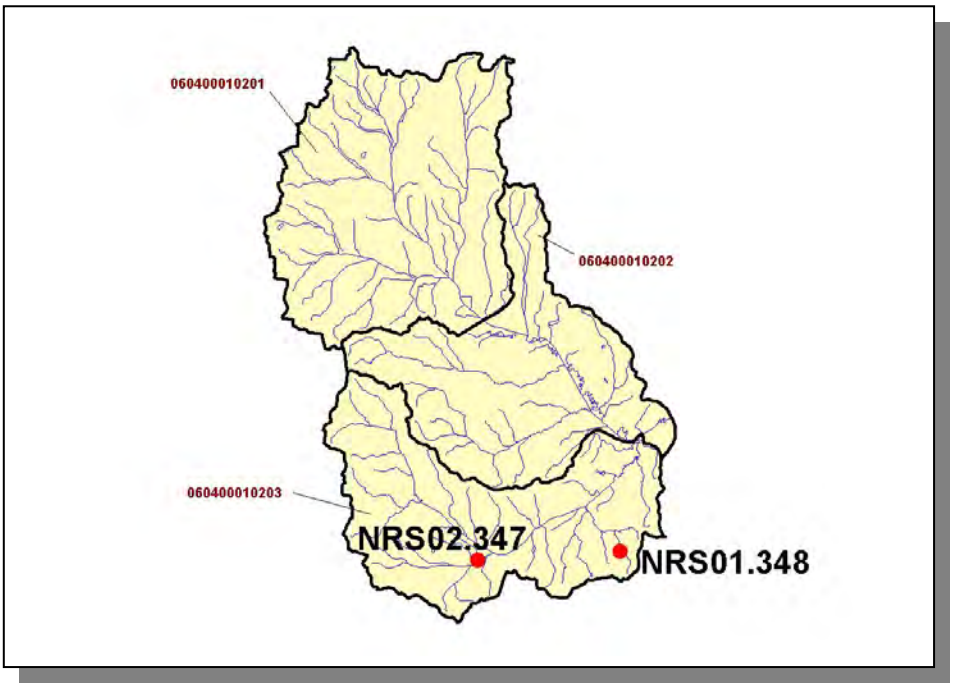


Figure 4-25. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

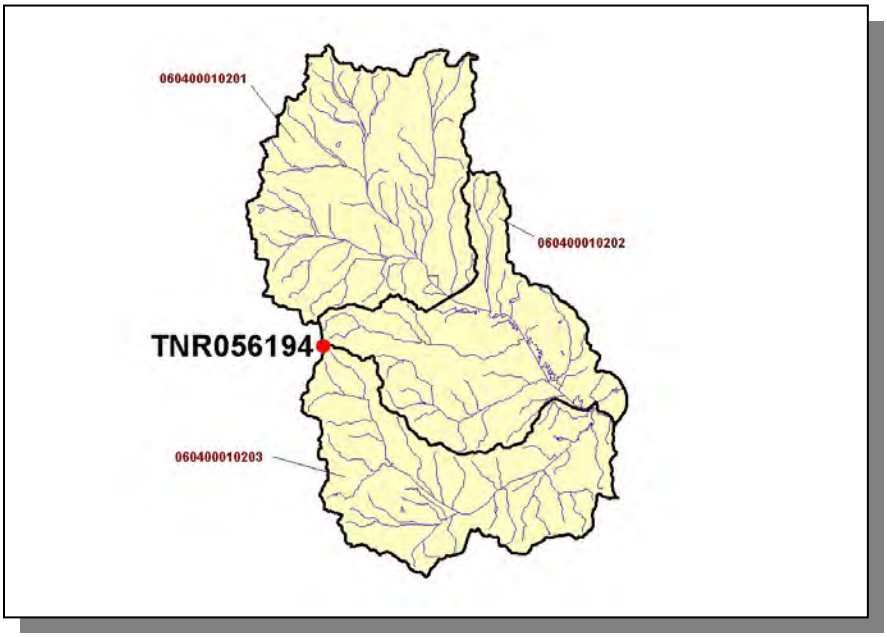


Figure 4-26. Location of TMSP Facilities in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.B.ii.a. Dischargers to Water Bodies Listed on the 2002 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2002 303(d) list in Subwatershed 0604000102:

- TN0064785 (Adamsville STP) discharges to Snake Creek @ RM 8.0

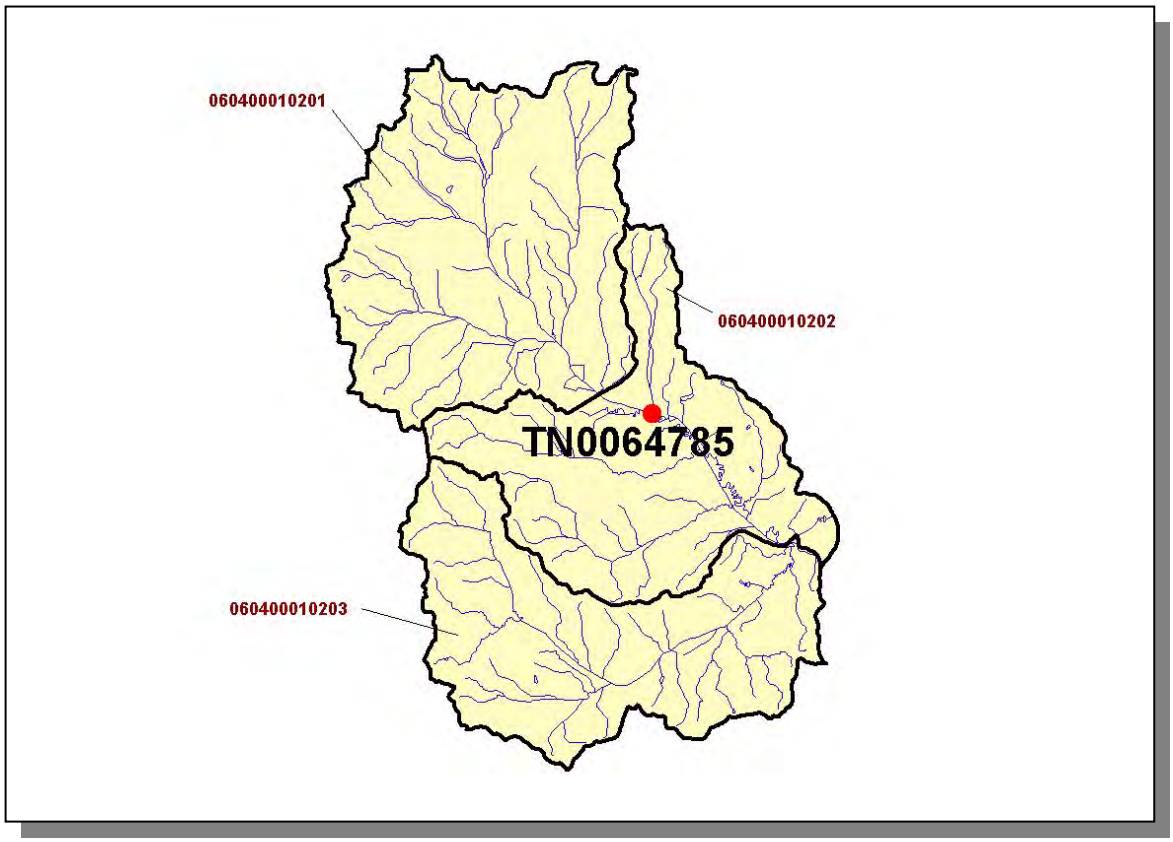


Figure 4-27. Location of NPDES Dischargers to Water Bodies Listed on the 2002 303(d) List in Subwatershed 0604000102. *Subwatershed 060400010201, 060400010202, and 060400010203 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0064785	0.2	0.2	0.3	0.1	0.299

Table 4-14. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000102. *Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.*

PERMIT #	$CBOD_5$	FECAL COLIFORM	TRC	TSS	SETTLEABLE SOLIDS	DO	pH
TN0064785	X	X	X	X	X	X	X

Table 4-15. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000102. *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.*

4.2.B.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
2,067	3,811	<5	7	<5	3,807	35

Table 4-16. Summary of Livestock Count Estimates in Subwatershed 0604000102. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6

Table 4-17. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000102.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.50
Grass (Hayland)	0.09
Legumes (Hayland)	0.12
Legumes, Grass (Hayland)	0.12
Grass, Forbs, Legumes (Mixed Pasture)	0.56
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	10.10
Cotton (Row Crops)	5.09
Sorghum (Row Crops)	3.62
Soybeans (Row Crops)	10.20
Wheat (Close-Grown Cropland)	2.18
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	3.21
Conservation Reserve Program Lands	0.29
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.14

Table 4-18. Annual Estimated Total Soil Loss in Subwatershed 0604000102.

4.2.C. 0604000103 (Horse Creek).

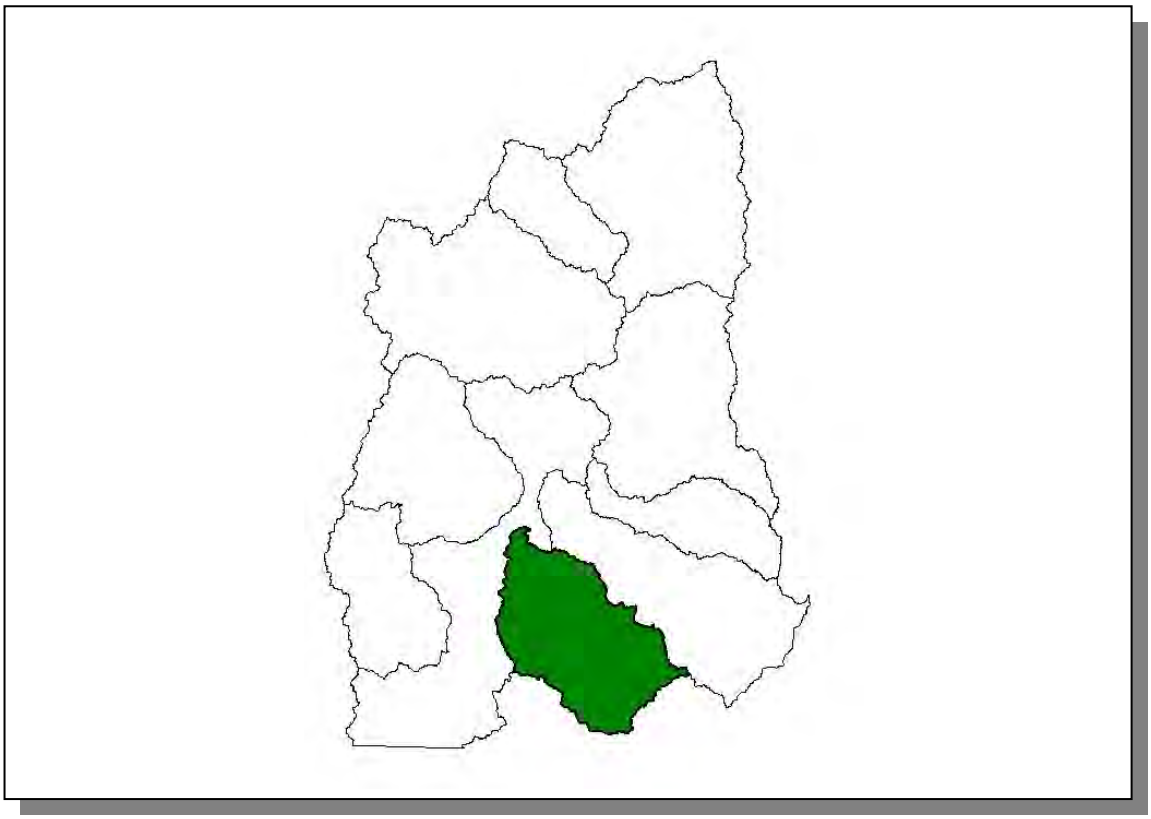


Figure 4-28. Location of Subwatershed 0604000103. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.C.i. General Description.

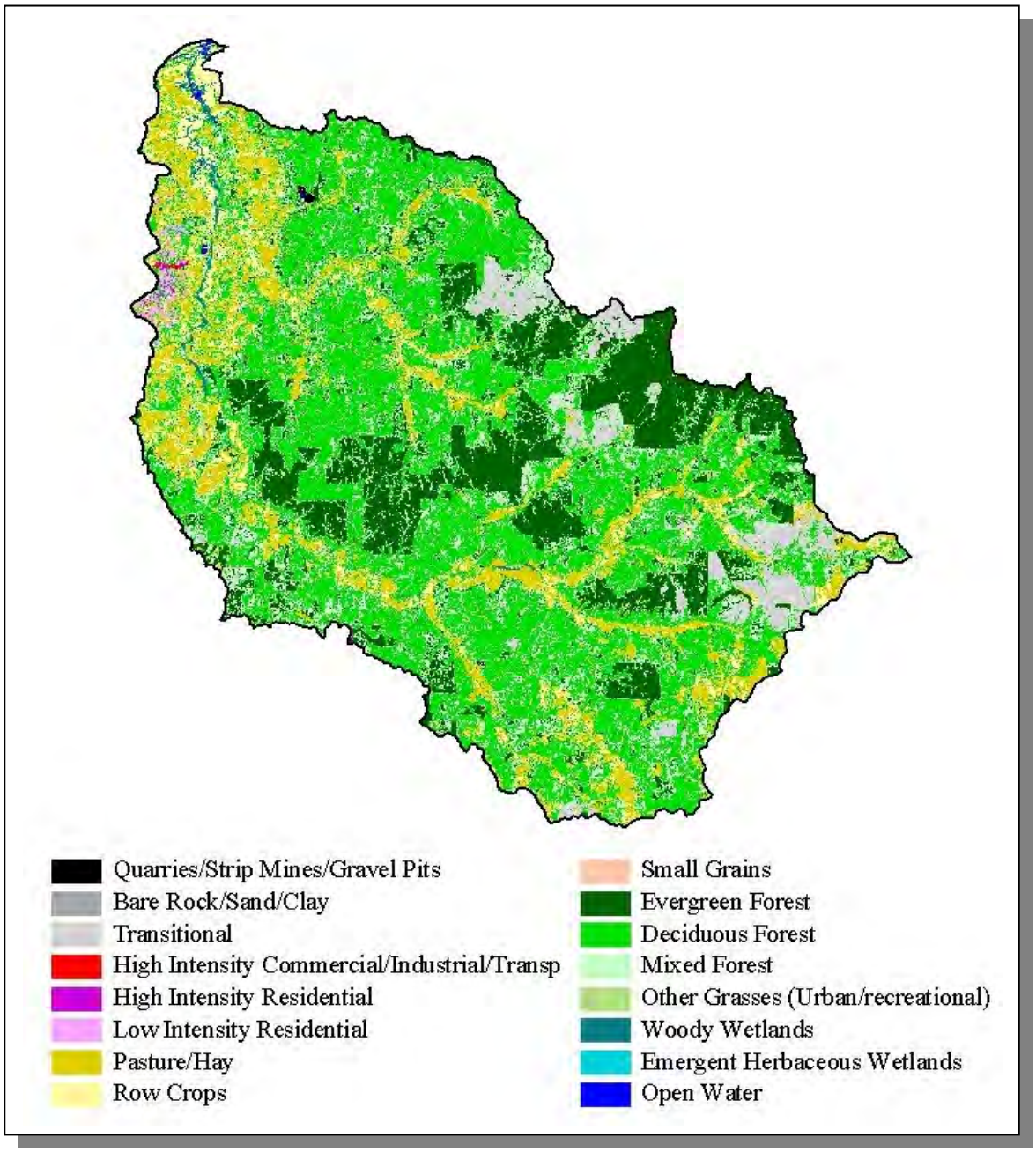


Figure 4-29. Illustration of Land Use Distribution in Subwatershed 0604000103.

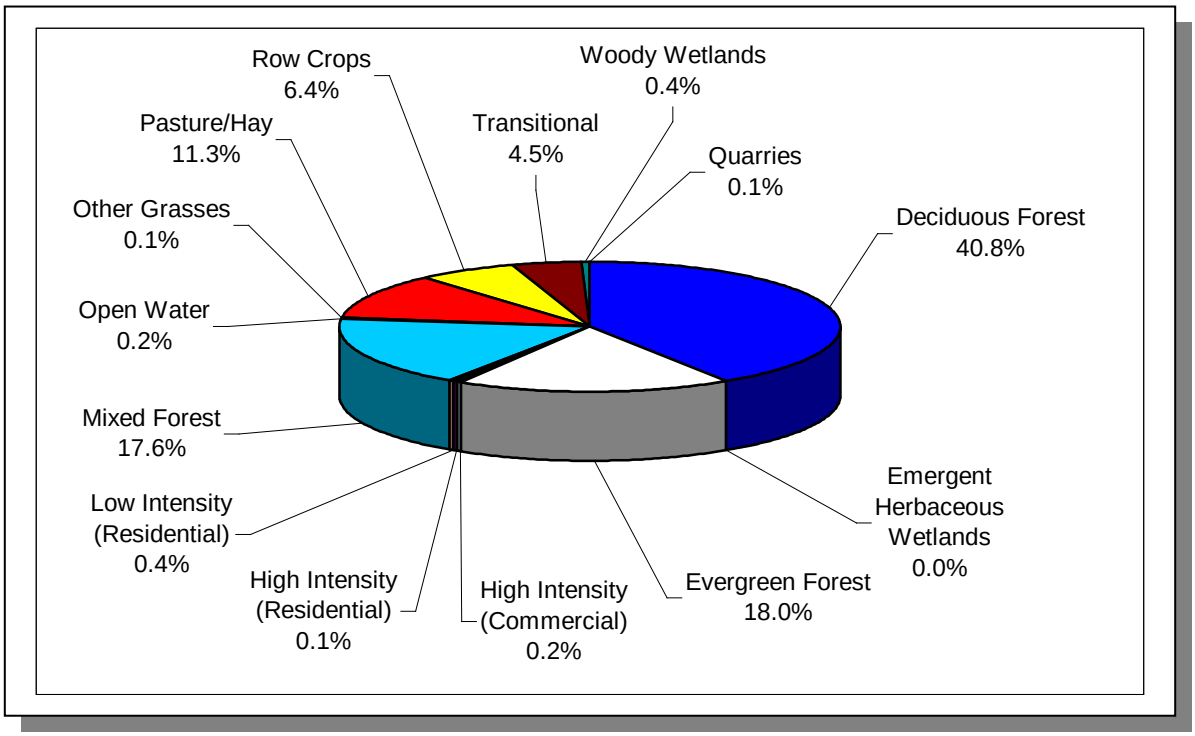


Figure 4-30. Land Use Distribution in Subwatershed 0604000103. *More information is provided in Appendix IV.*

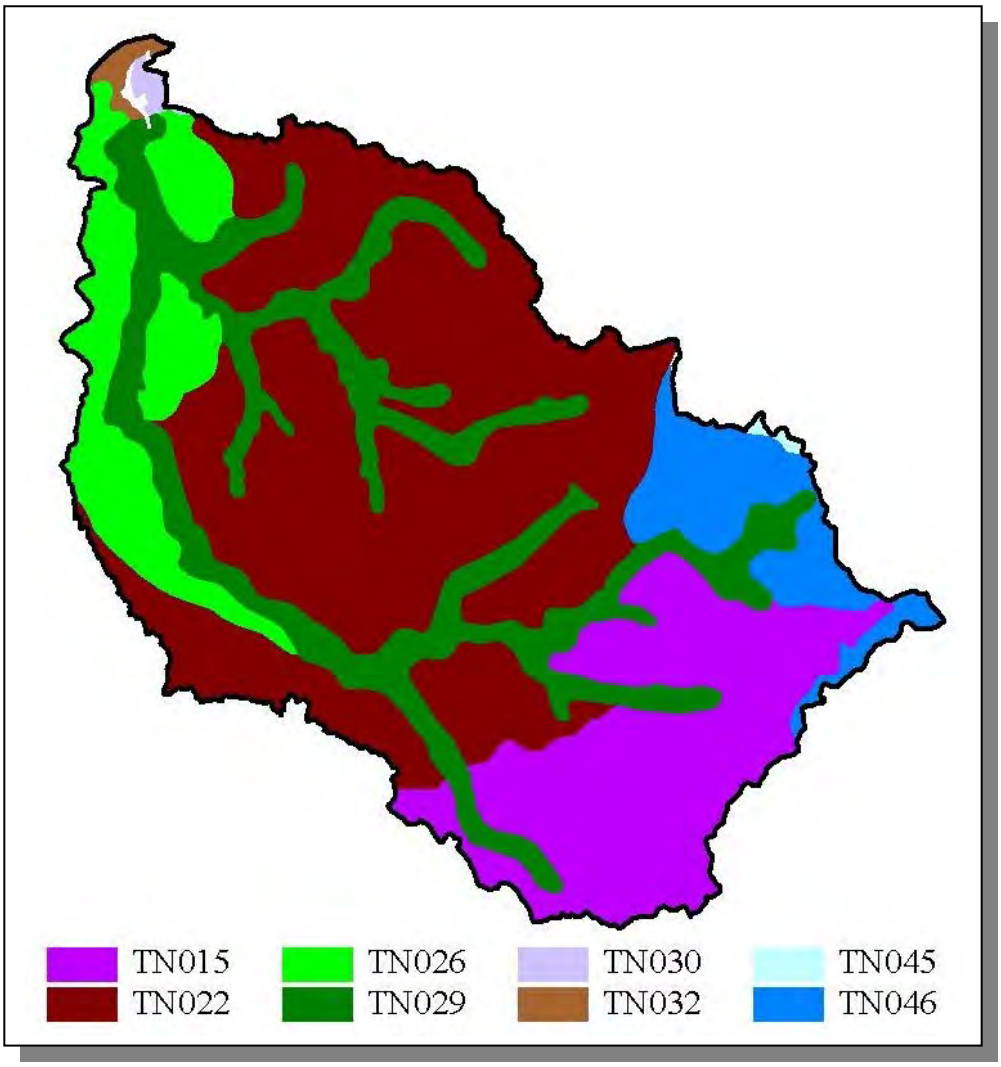


Figure 4-31. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000103.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN015	4.00	C	3.62	4.98	Sandy Loam	0.25
TN022	5.00	C	1.98	5.07	Loam	0.37
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN029	8.00	C	2.96	5.40	Loam	0.33
TN030	2.00	B	1.84	5.06	Loam	0.33
TN032	19.00	C	1.21	5.51	Silty Loam	0.37
TN045	0.00	B	1.95	5.45	Loam	0.35
TN046	0.00	B	1.98	5.09	Silty Loam	0.38

Table 4-19. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000103. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Hardin	22,633	24,816	25,578	30.48	6,898	7,563	7,796	13.0
Wayne	13,935	16,498	16,842	1.52	211	250	255	20.9
Totals	**36,568**	**41,314**	**42,420**		**7,109**	**7,813**	**8,051**	**13.3**

Table 4-20. Population Estimates in Subwatershed 0604000103.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Savannah	Hardin	6,569	2,782	2,719	63	0

Table 4-21. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000103.

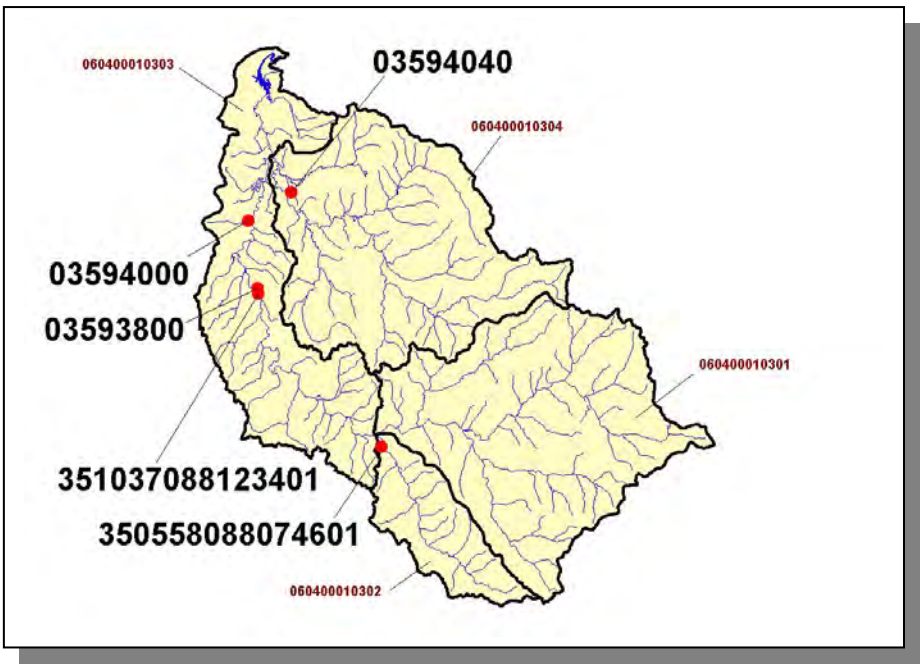


Figure 4-32. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000103. *Subwatershed 060400010301, 060400010302, 060400010303, and 060400010304 boundaries are shown for reference. More information is provided in Appendix IV.*

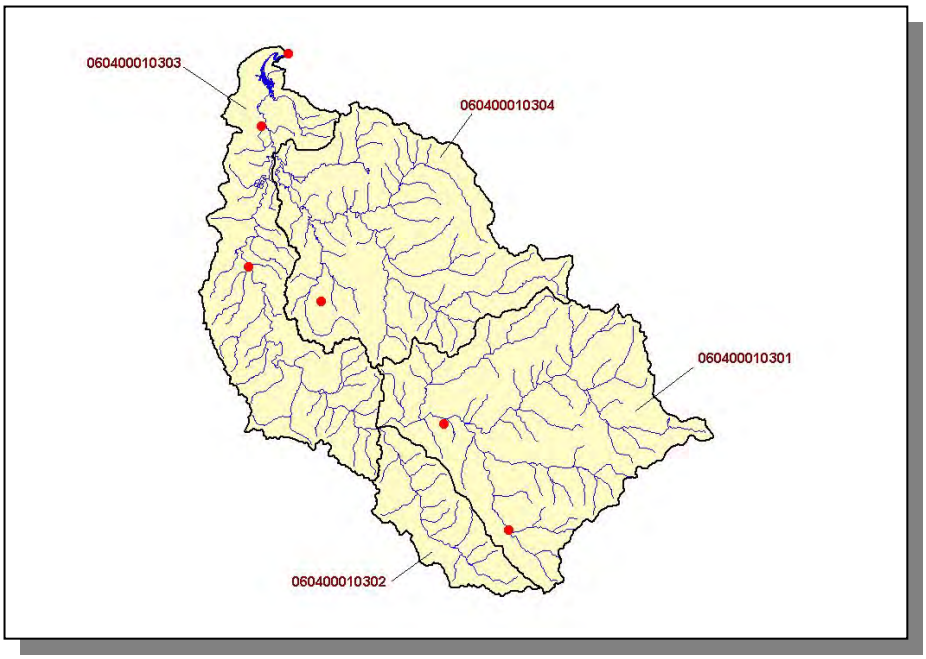


Figure 4-33. Location of STORET Monitoring Sites in Subwatershed 0604000103. *Subwatershed 060400010301, 060400010302, 060400010303, and 060400010304 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.C.ii. Point Source Contributions.

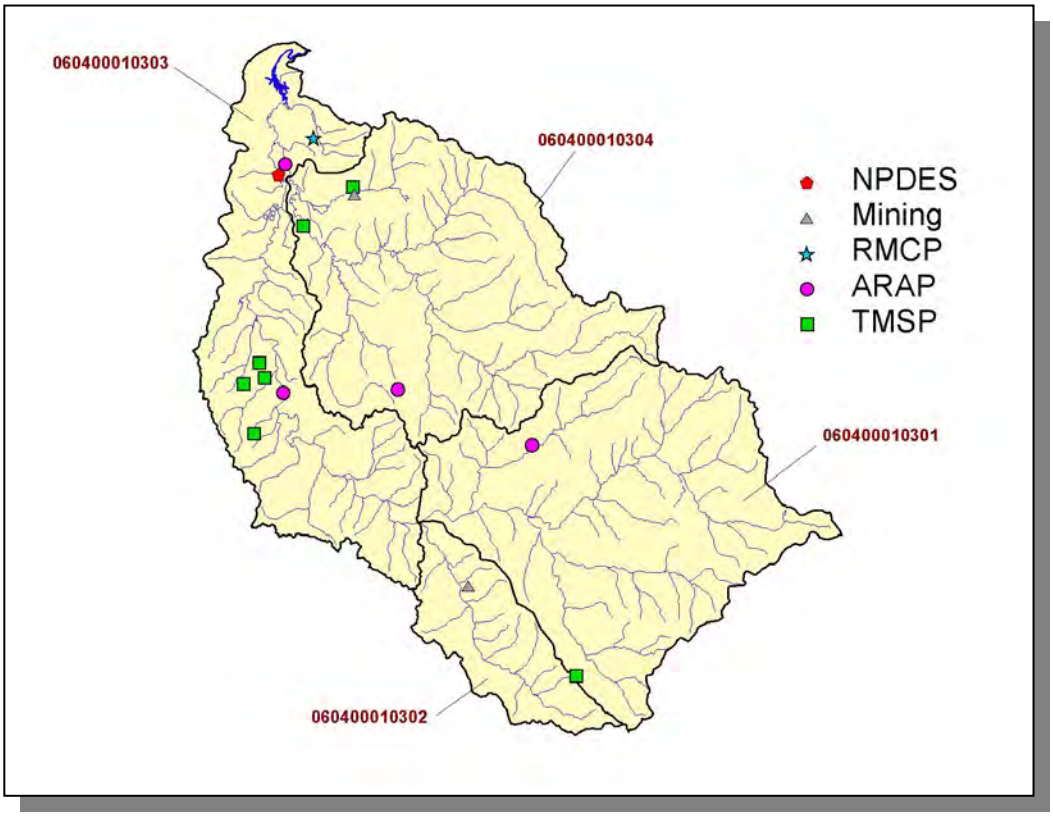


Figure 4-34. Location of Active Point Source Facilities in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

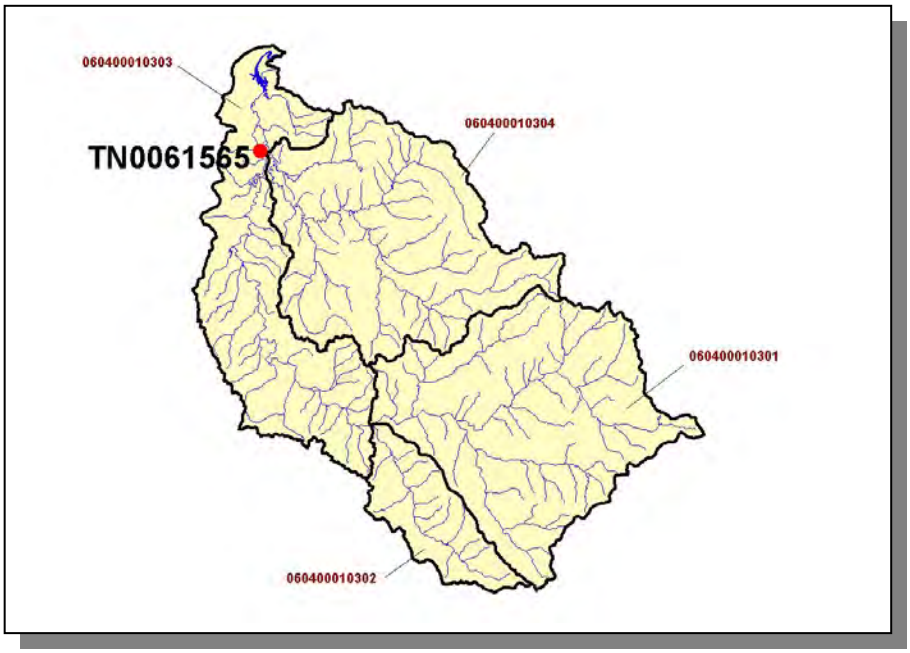


Figure 4-35. Location of NPDES Facilities in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

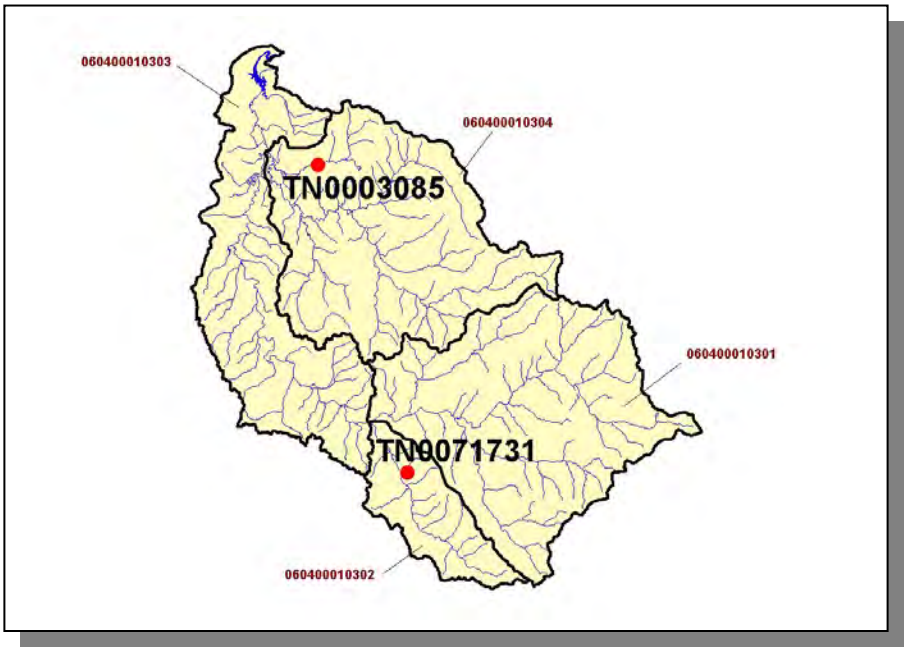


Figure 4-36. Location of Active Mining Facilities in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-37. Location of Ready Mix Concrete Plants in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

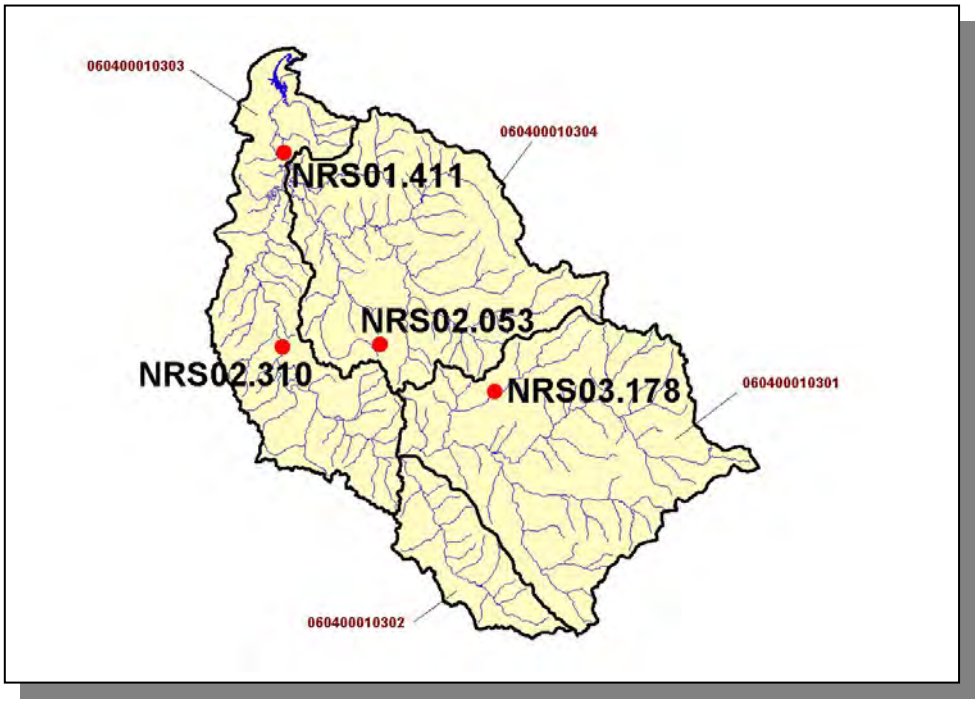


Figure 4-38. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

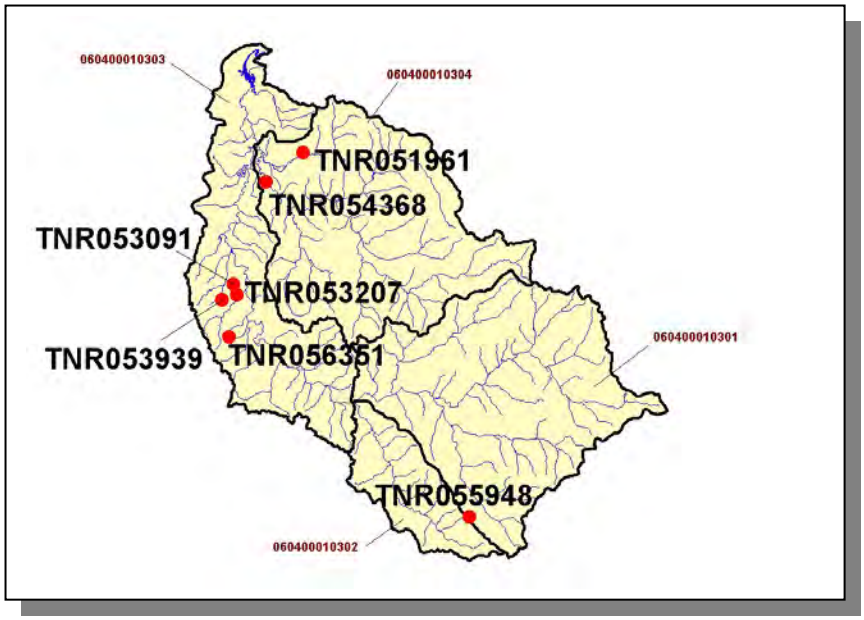


Figure 4-39. Location of TMSP Facilities in Subwatershed 0604000103. *Subwatershed 0604000103, 0604000103, 0604000103, and 0604000103 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.C.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,053	3,942	<5	6	<5	1,053	26

Table 4-22. Summary of Livestock Count Estimates in Subwatershed 0604000103. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6
Wayne	372.6	392.6	14.1	41.1
Totals	**592.5**	**592.5**	**20.6**	**68.7**

Table 4-23. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000103.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.15
Grass (Hayland)	0.30
Legumes, Grass (Hayland)	0.46
Grass, Forbs, Legumes (Mixed Pasture)	0.44
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.15
Cotton (Row Crops)	2.63
Soybeans (Row Crops)	13.10
Wheat (Close-Grown Cropland)	3.93
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	9.54
Conservation Reserve Program Lands	0.35
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.39

Table 4-24. Annual Estimated Total Soil Loss in Subwatershed 0604000103.

4.2.D. 0604000104 (White Oak Creek).

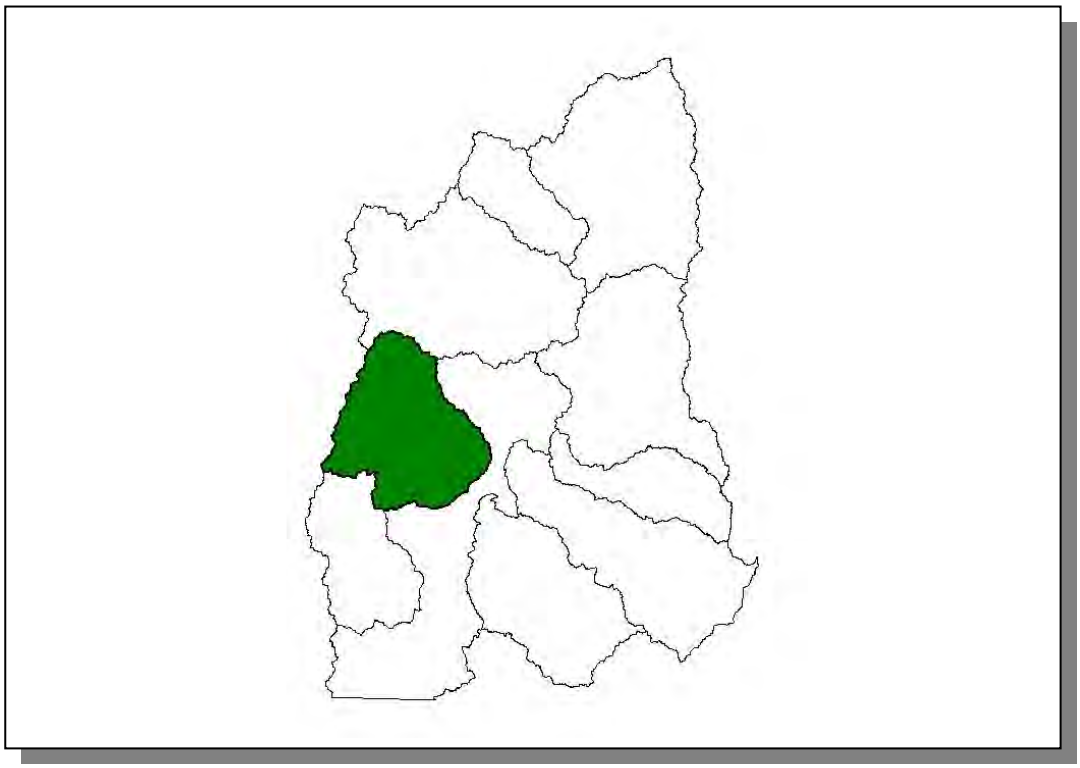


Figure 4-40. Location of Subwatershed 0604000104. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.D.i. General Description.

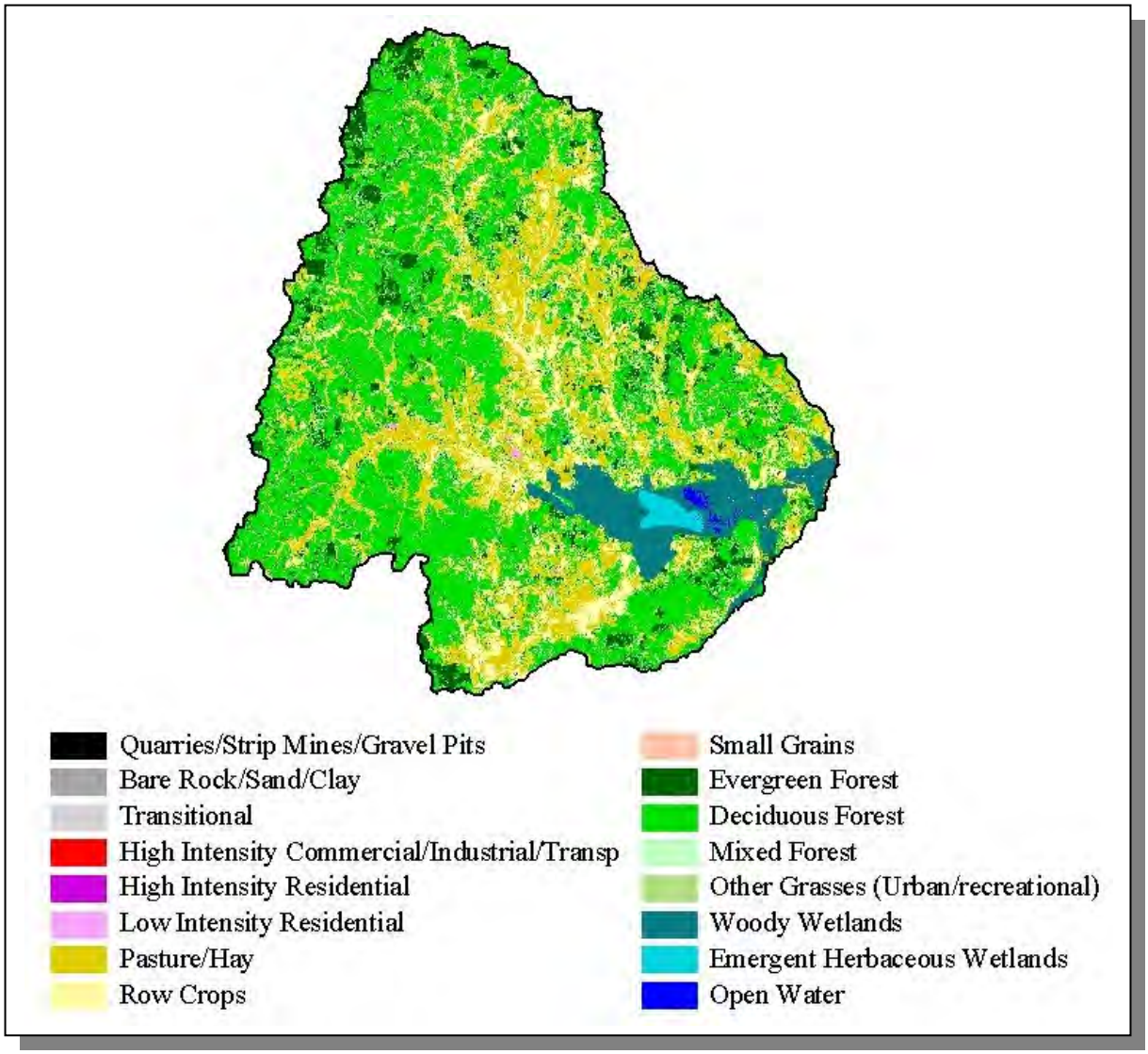


Figure 4-41. Illustration of Land Use Distribution in Subwatershed 0604000104.

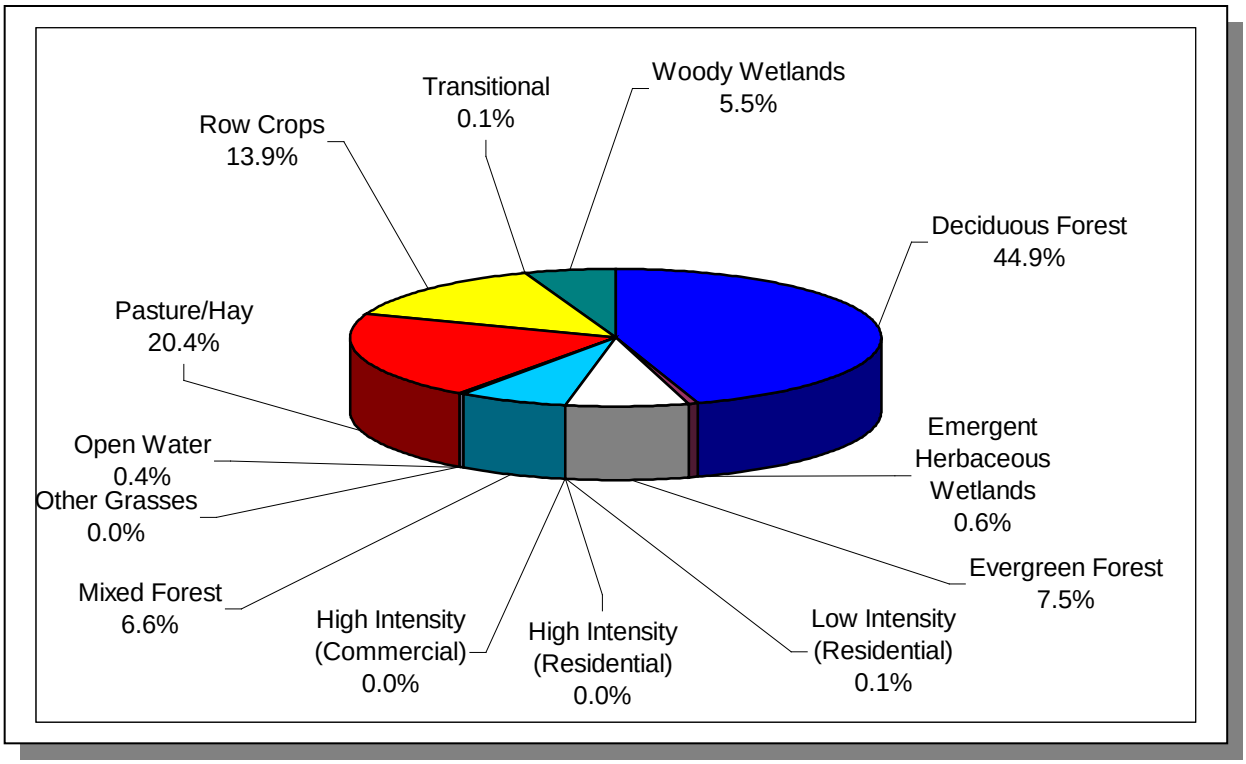


Figure 4-42. Land Use Distribution in Subwatershed 0604000104. *More information is provided in Appendix IV.*

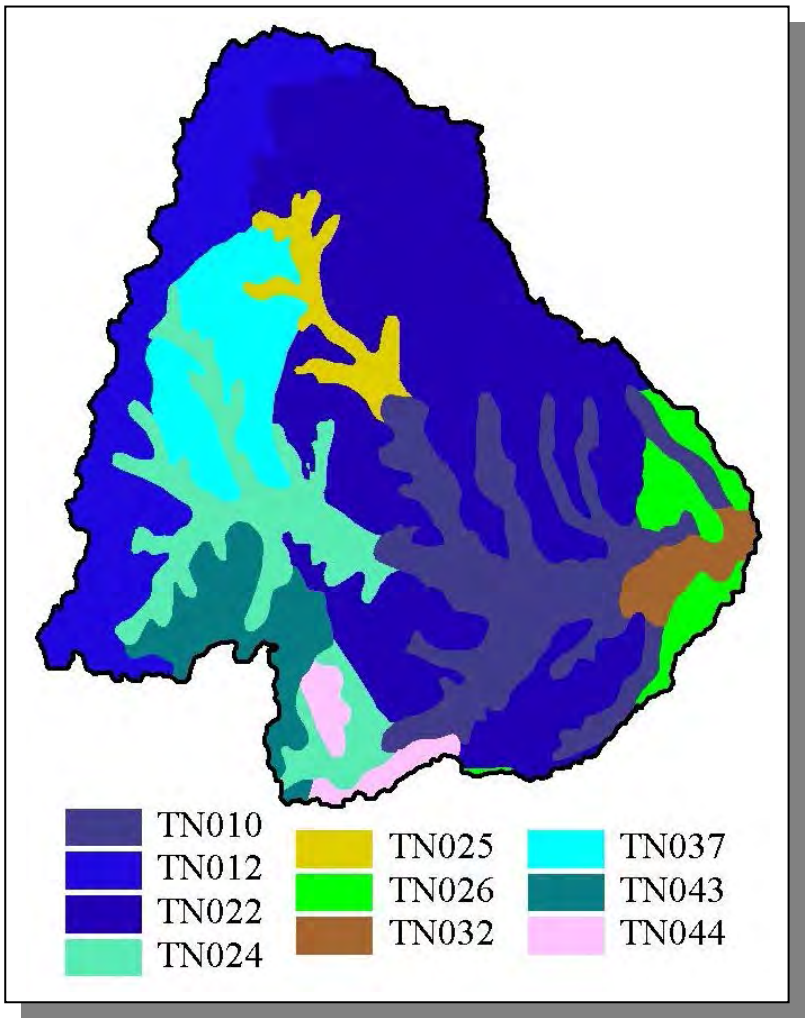


Figure 4-43. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000104.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN010	81.00	C	1.33	5.11	Silty Loam	0.44
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN022	5.00	C	1.98	5.07	Loam	0.37
TN024	61.00	D	2.18	5.35	Loam	0.29
TN025	53.00	C	2.00	5.52	Loam	0.25
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN032	19.00	C	1.21	5.51	Silty Loam	0.37
TN037	0.00	C	3.51	4.86	Sandy Loam	0.27
TN043	0.00	C	2.70	5.02	Loam	0.30
TN044	0.00	C	1.48	5.32	Silty Loam	0.42

Table 4-25. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000104. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Chester	12,819	14,469	15,540	15.90	2,041	2,303	2,474	21.2
Hardin	22,633	24,816	25,578	12.23	2,767	3,034	3,127	13.0
Henderson	21,844	24,000	25,522	6.36	1,389	1,526	1,623	16.8
McNairy	22,422	23,678	24,653	7.35	1,648	1,740	1,812	10.0
Totals	**79,718**	**86,963**	**91,293**		**7,845**	**8,603**	**9,036**	**15.2**

Table 4-26. Population Estimates in Subwatershed 0604000104.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Adamsville	McNairy	1,745	764	606	154	4
Enville	McNairy	196	121	1	117	3
Milledgeville	McNairy	291	154	2	152	0
Sardis	Henderson	315	159	8	151	0
Crump	Hardin	2,006	951	67	873	11
Saltillo	Hardin	377	232	13	194	25
Total		**4,930**	**2,181**	**697**	**1,641**	**43**

Table 4-27. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000104.

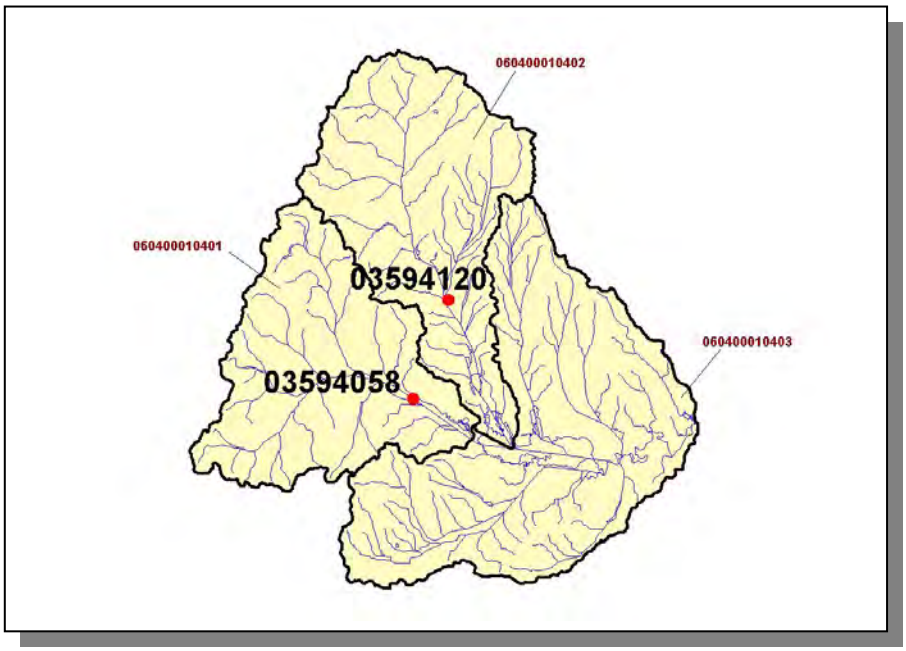


Figure 4-44. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000104. *Subwatershed 060400010401, 060400010402, and 060400010403 boundaries are shown for reference. More information is provided in Appendix IV.*

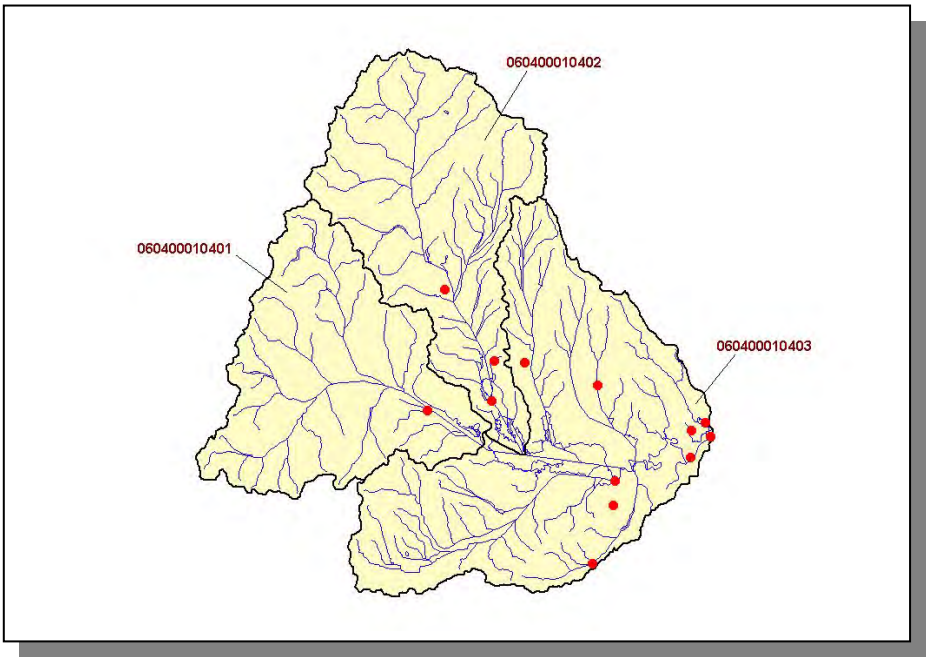


Figure 4-45. Location of STORET Monitoring Sites in Subwatershed 0604000104. *Subwatershed 060400010401, 060400010402, and 060400010403 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.D.ii. Point Source Contributions.

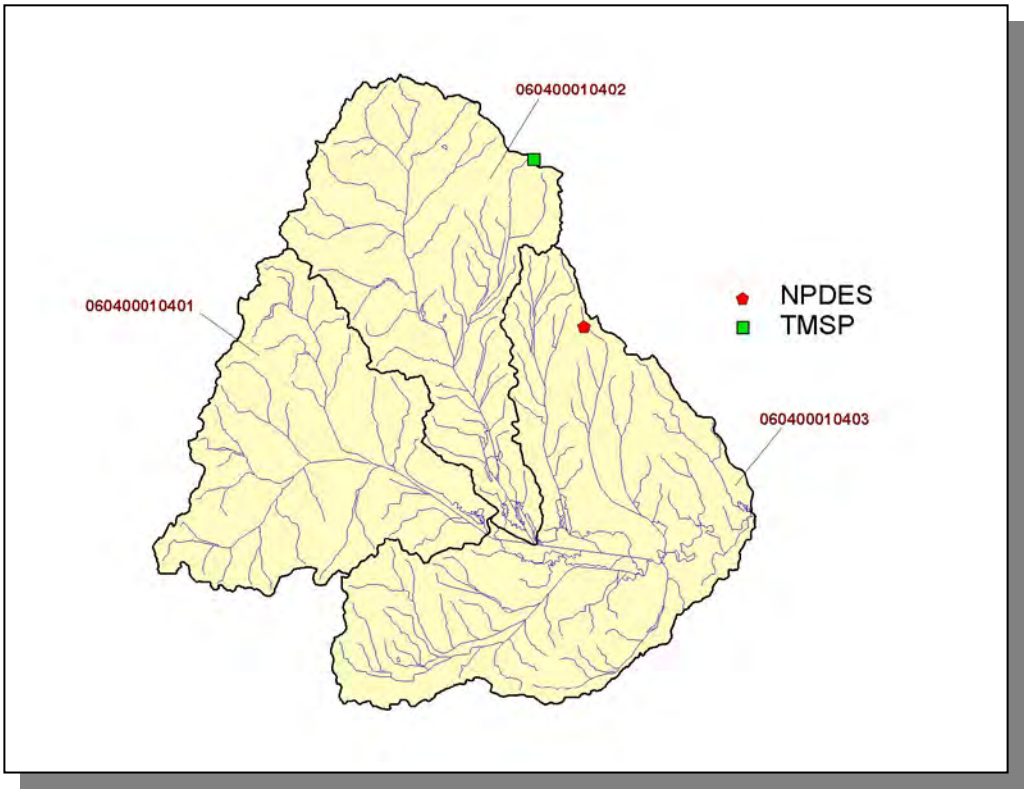


Figure 4-46. Location of Active Point Source Facilities in Subwatershed 0604000104. *Subwatershed 0604000104, 0604000104, and 0604000104 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

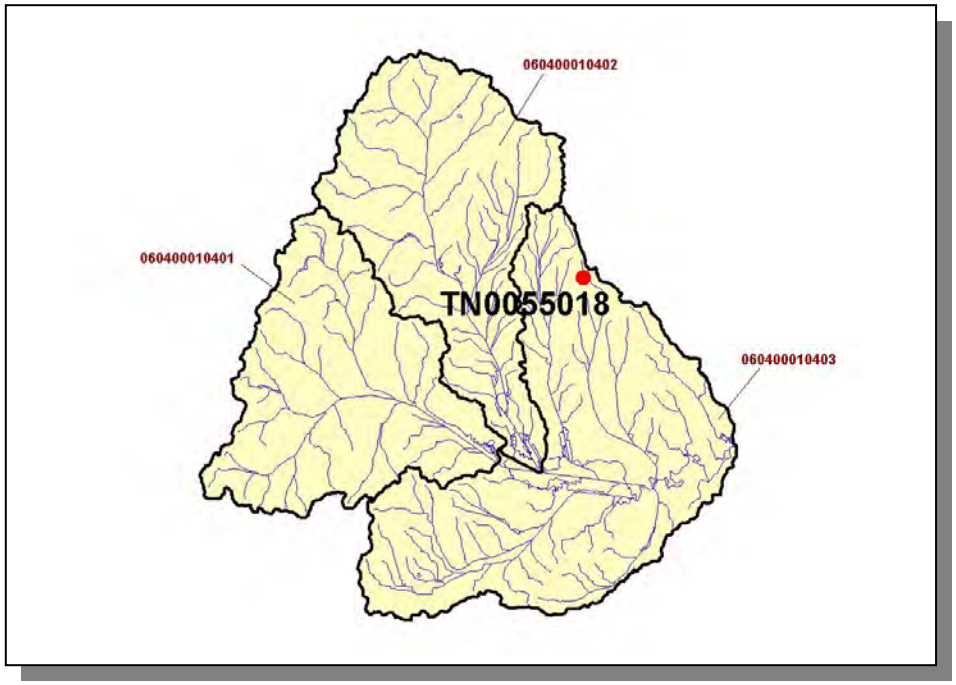


Figure 4-47. Location of NPDES Facilities in Subwatershed 0604000104. *Subwatershed 0604000104, 0604000104, and 0604000104 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

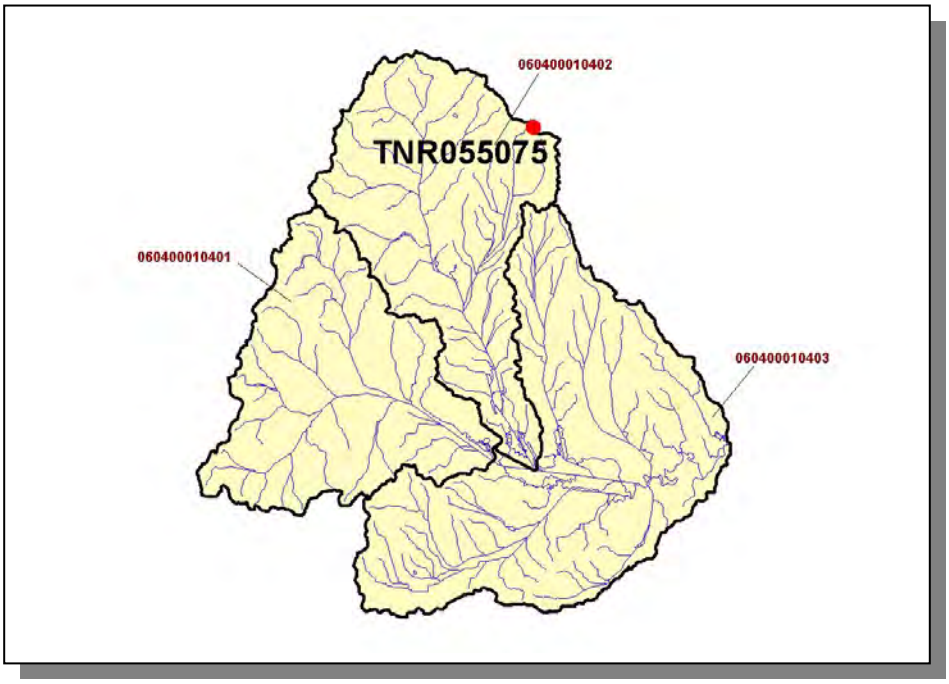


Figure 4-48. Location of TMSP Facilities in Subwatershed 0604000104. *Subwatershed 0604000104, 0604000104, and 0604000104 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.D.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens Sold	Hogs	Sheep
2,935	8	8,454	12	<5	3,271	42

Table 4-28. Summary of Livestock Count Estimates in Subwatershed 0604000104. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Chester	99.4	99.4	0.3	1.3
Hardin	219.9	219.9	6.5	27.6
Henderson	158.5	158.5	3.6	12.8
Total	**477.8**	**477.8**	**10.4**	**41.7**

Table 4-29. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000104.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.40
Grass (Hayland)	0.21
Legumes (Hayland)	0.12
Legumes, Grass (Hayland)	0.29
Grass, Forbs, Legumes (Mixed Pasture)	0.64
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	7.41
Cotton (Row Crops)	7.73
Sorghum (Row Crops)	3.62
Soybeans (Row Crops)	9.54
Wheat (Close-Grown Cropland)	5.32
All Other Close-Grown Cropland	5.50
Other Vegetable and Truck Crops	28.15
Other Cropland not Planted	5.28
Conservation Reserve Program Lands	0.36
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.26

Table 4-30. Annual Soil Loss in Subwatershed 0604000104.

4.2.E. 0604000105 (Indian Creek).

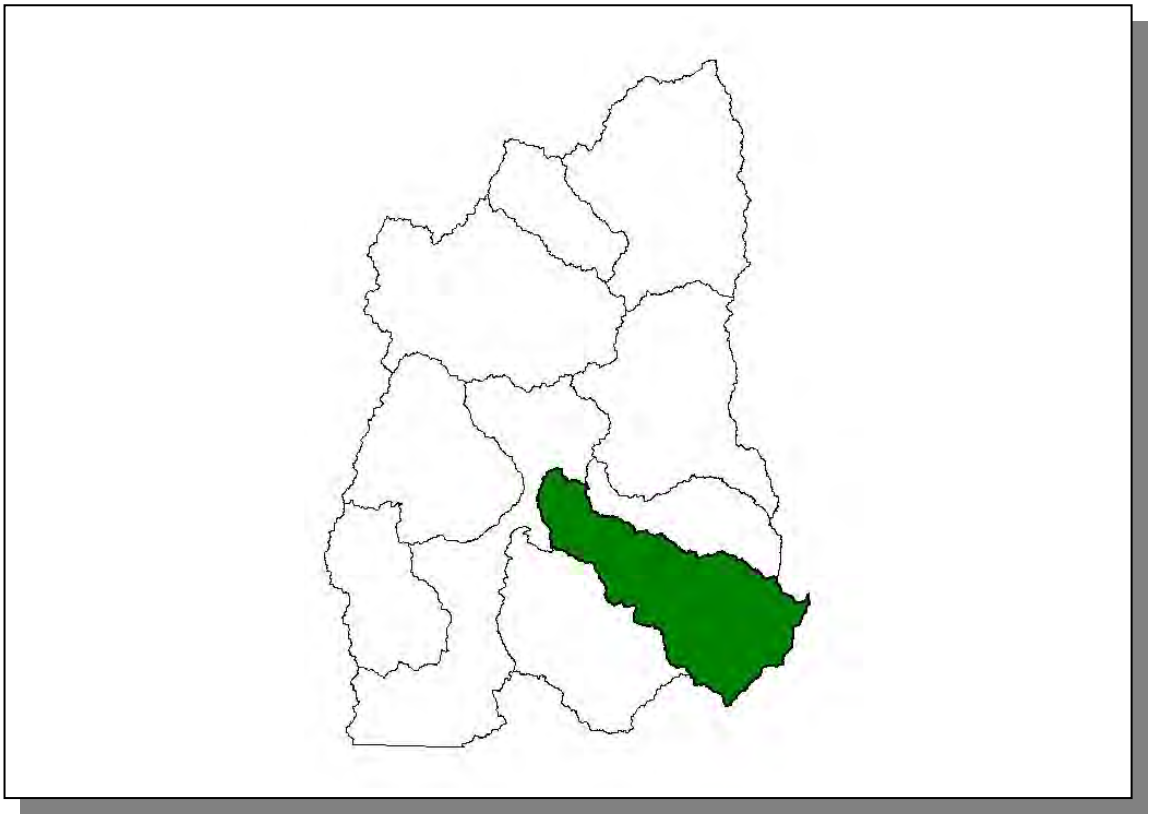


Figure 4-49. Location of Subwatershed 0604000105. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.E.i. General Description.

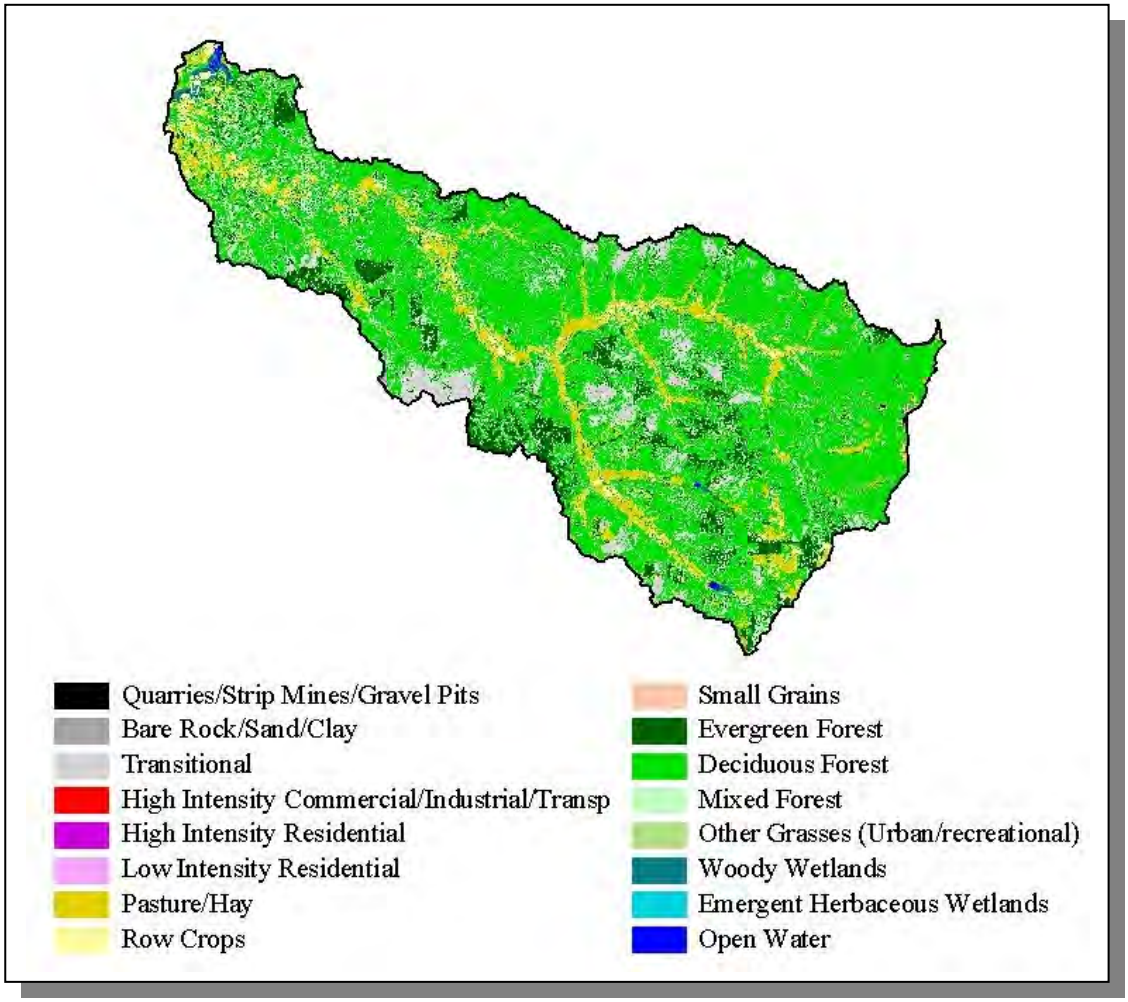


Figure 4-50. Illustration of Land Use Distribution in Subwatershed 0604000105.

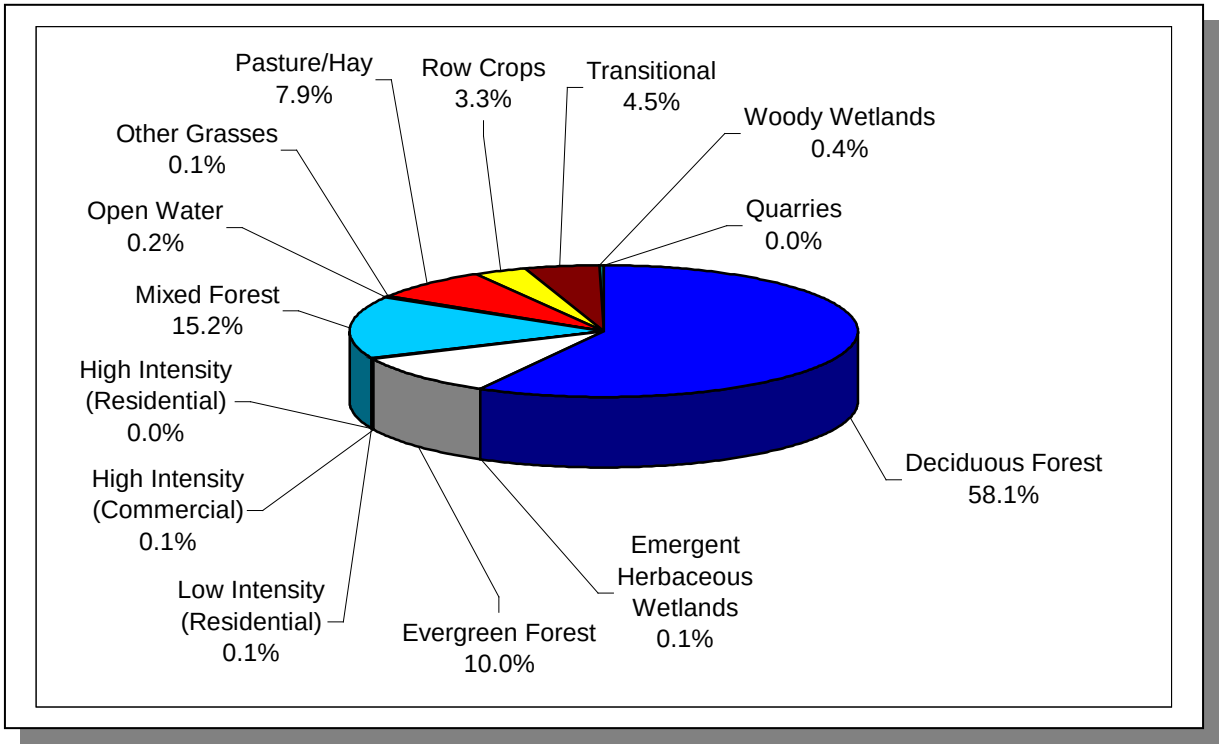


Figure 4-51. Land Use Distribution in Subwatershed 0604000105. *More information is provided in Appendix IV.*

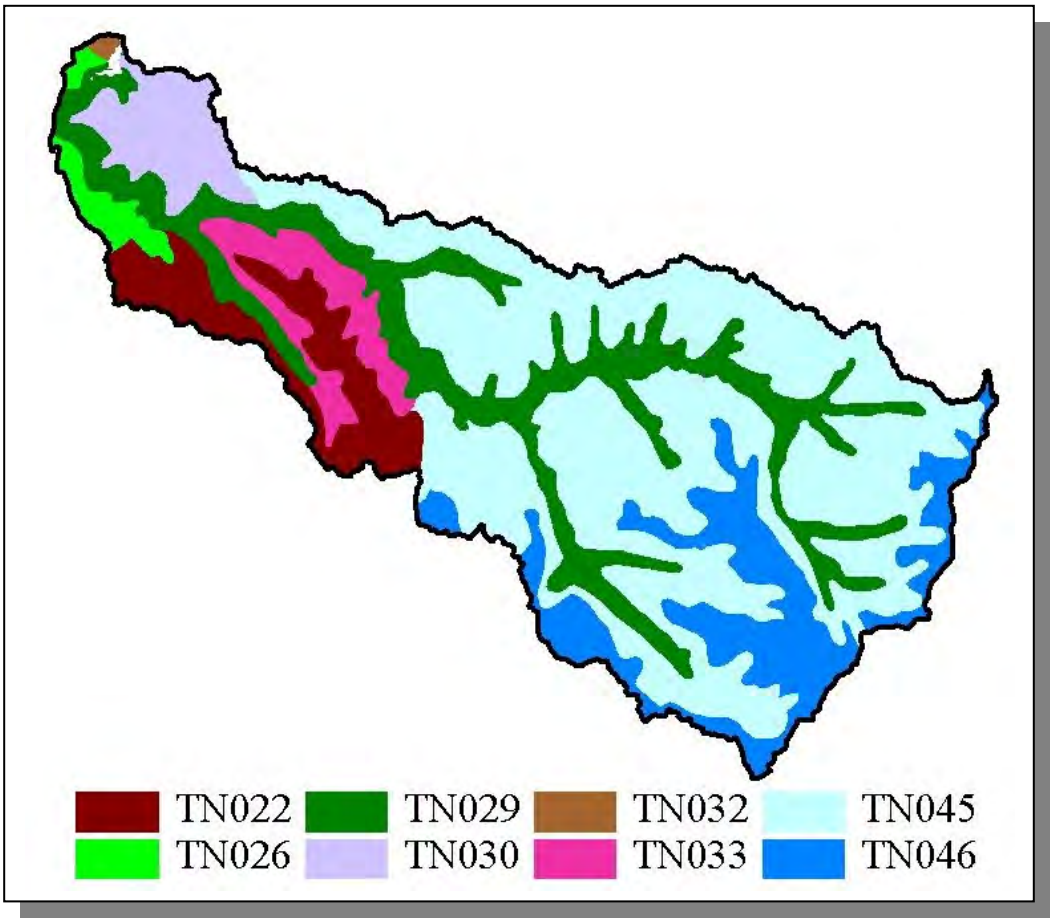


Figure 4-52. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000105.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN022	5.00	C	1.98	5.07	Loam	0.37
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN029	8.00	C	2.96	5.40	Loam	0.33
TN030	2.00	B	1.84	5.06	Loam	0.33
TN032	19.00	C	1.21	5.51	Silty Loam	0.37
TN033	0.00	B	2.29	5.32	Loam	0.32
TN045	0.00	B	1.95	5.45	Loam	0.35
TN046	0.00	B	1.98	5.09	Silty Loam	0.38

Table 4-31. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000105. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Hardin	22,633	24,816	25,578	13.19	2,984	3,272	3,373	13.0
Wayne	13,935	16,498	16,842	20.22	2,817	3,335	3,405	20.9
Totals	**36,568**	**41,314**	**42,420**		**5,801**	**6,607**	**6,778**	**16.8**

Table 4-32. Population Estimates in Subwatershed 0604000105.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Collinwood	Wayne	1,014	440	31	407	2

Table 4-33. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000105.

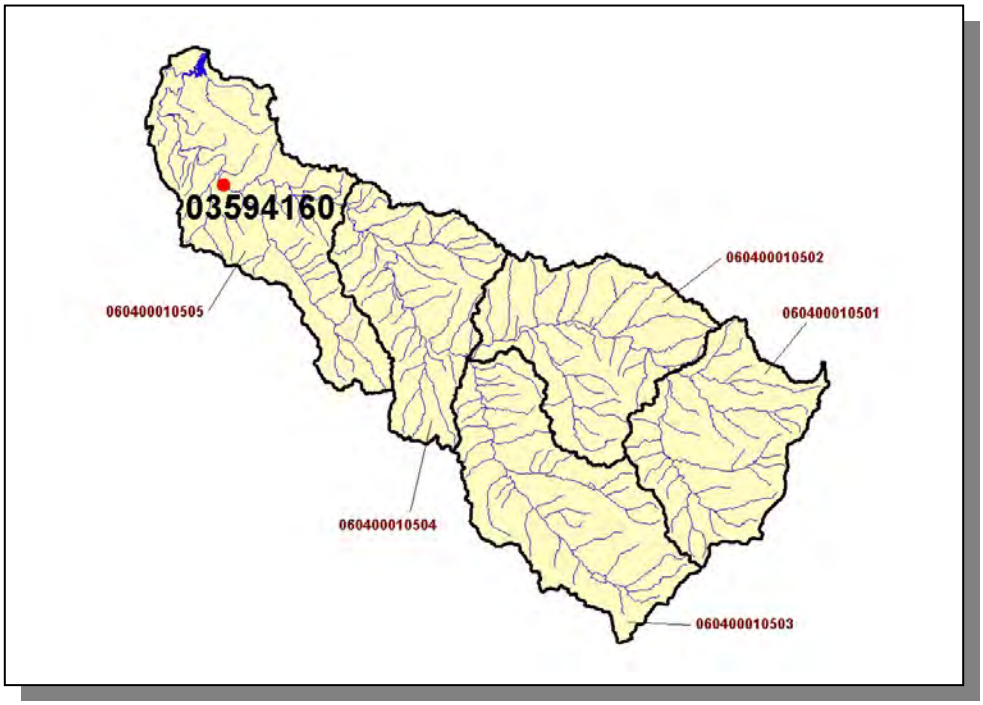


Figure 4-53. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000105. *Subwatershed 060400010501, 060400010502, 060400010503, 060400010504 and 060400010505 boundaries are shown for reference. More information is provided in Appendix IV.*

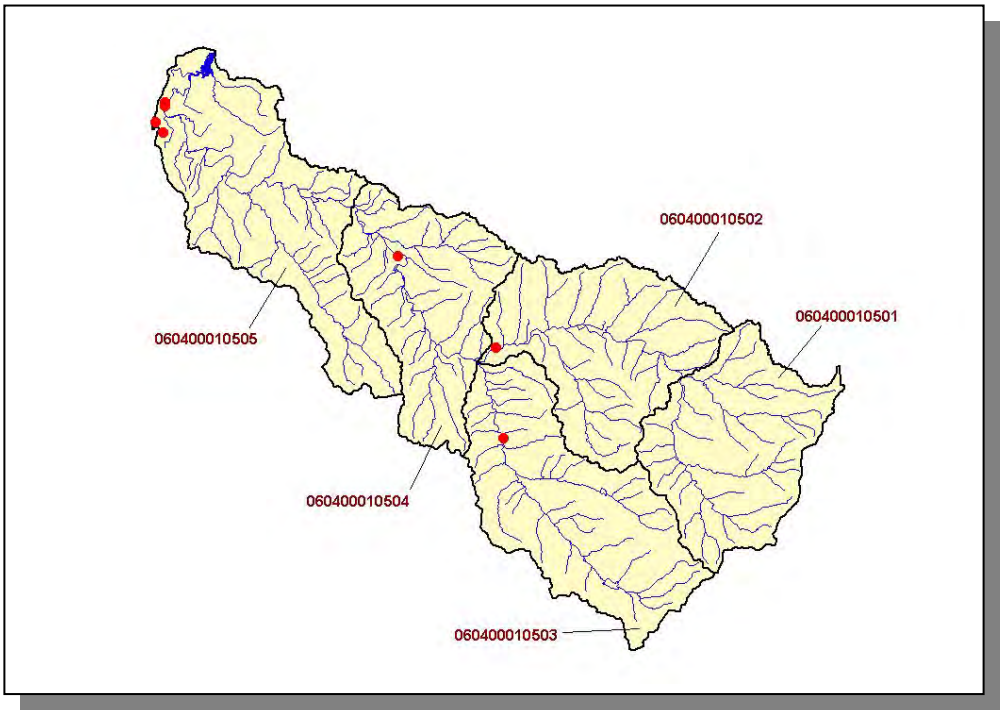


Figure 4-54. Location of STORET Monitoring Sites in Subwatershed 0604000105. *Subwatershed 060400010501, 060400010502, 060400010503, 060400010504 and 060400010505 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.E.ii. Point Source Contributions.

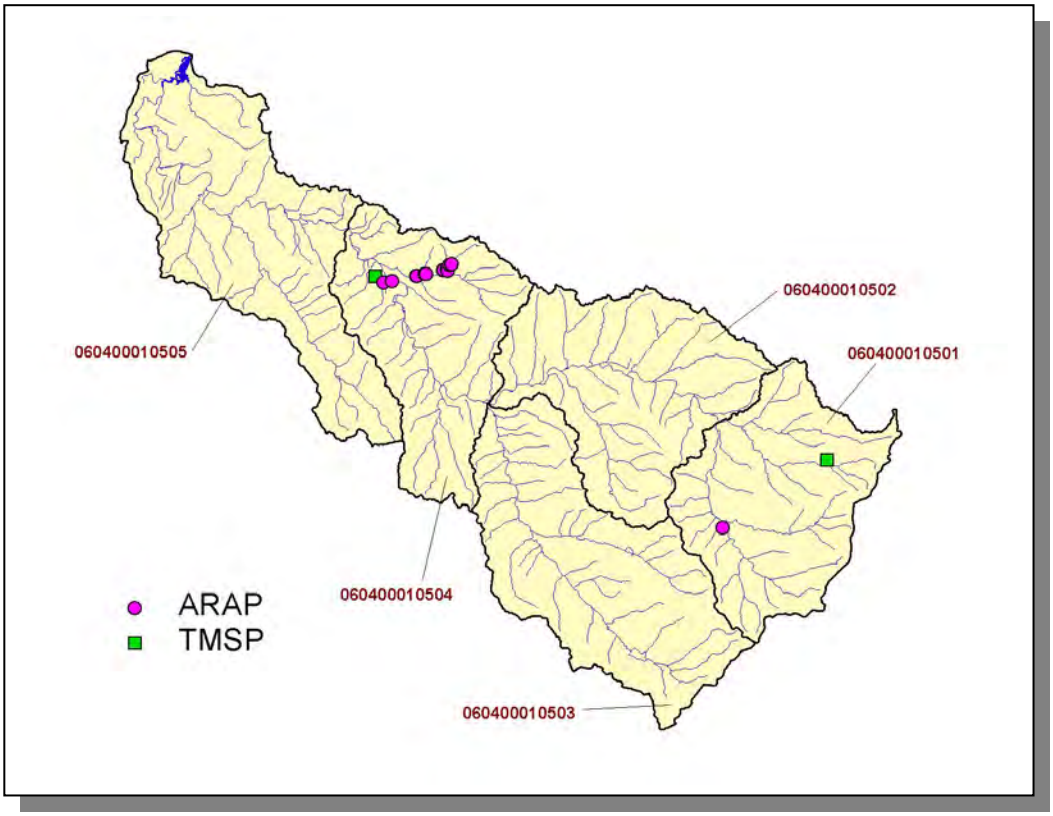


Figure 4-55. Location of Active Point Source Facilities in Subwatershed 0604000105. *Subwatershed 0604000105, 0604000105, 0604000105, 0604000105, and 0604000105 boundaries are shown for reference. More information is provided in Appendix IV.*

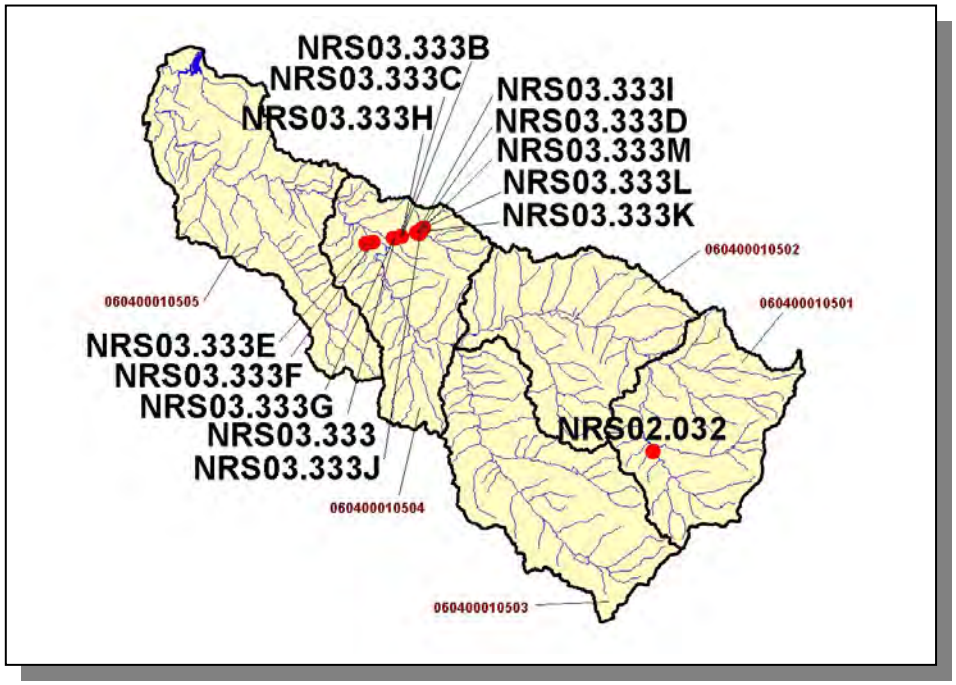


Figure 4-56. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000105. *Subwatershed 0604000105, 0604000105, 0604000105, 0604000105, and 0604000105 boundaries are shown for reference. More information is provided in Appendix IV.*

Figure 4-57. Location of TMSP Facilities in Subwatershed 0604000105. *Subwatershed 0604000105, 0604000105, 0604000105, 0604000105, and 0604000105 boundaries are shown for reference. More information is provided in Appendix IV.*

4.2.E.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
3,120	<5	5,664	6	9	784	32

Table 4-34. Summary of Livestock Count Estimates in Subwatershed 0604000105. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6
Wayne	372.6	372.6	14.1	41.1
Totals	**592.5**	**592.5**	**20.6**	**68.7**

Table 4-35. Forest Acreage and Annual Removal Rates (1987-1994) in Subwatershed 0604000105.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.19
Grass (Hayland)	0.23
Legumes, Grass (Hayland)	0.46
Grass, Forbs, Legumes (Mixed Pasture)	0.60
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	6.56
Cotton (Row Crops)	2.63
Soybeans (Row Crops)	13.10
Wheat (Close-Grown Cropland)	3.93
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	9.54
Conservation Reserve Program Lands	0.35
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.69

Table 4-36. Annual Estimated Soil Loss in Subwatershed 0604000105.

4.2.F. 0604000106 (Hardin Creek).

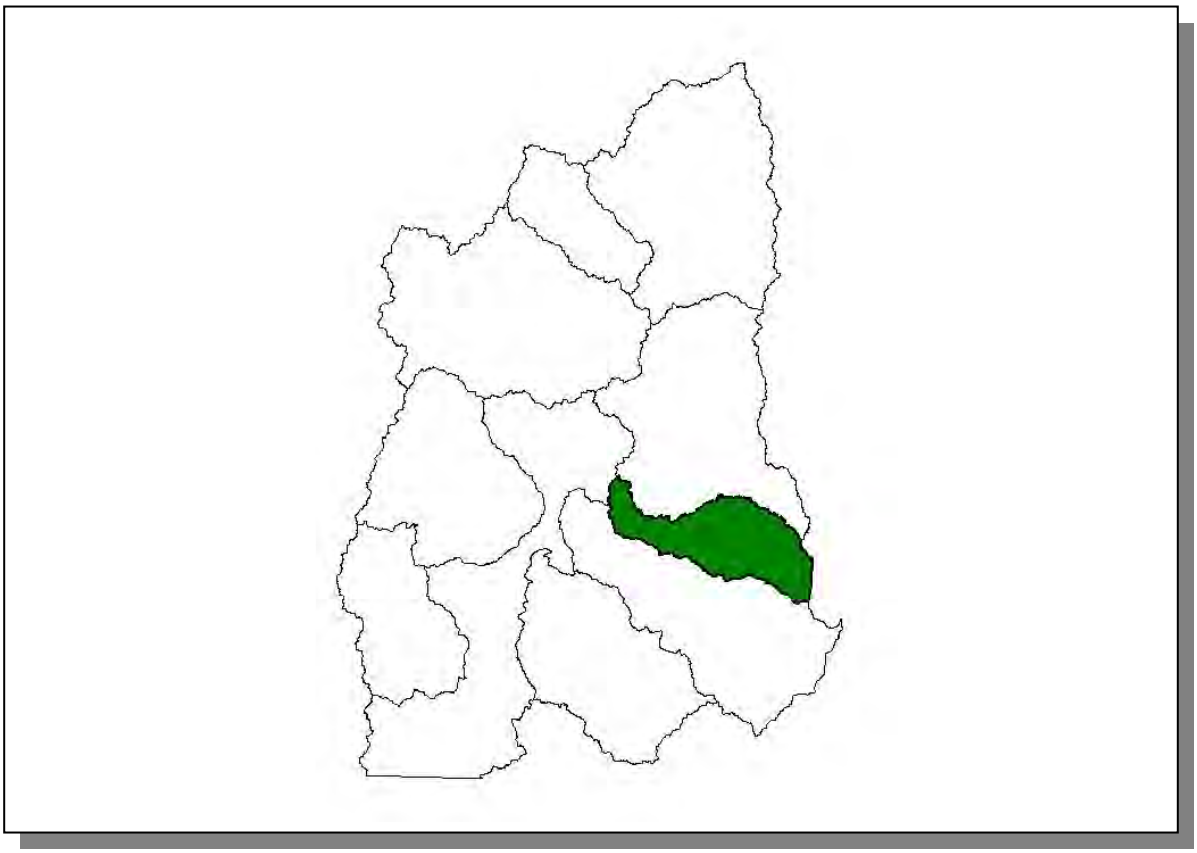


Figure 4-58. Location of Subwatershed 0604000106. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.F.i. General Description.

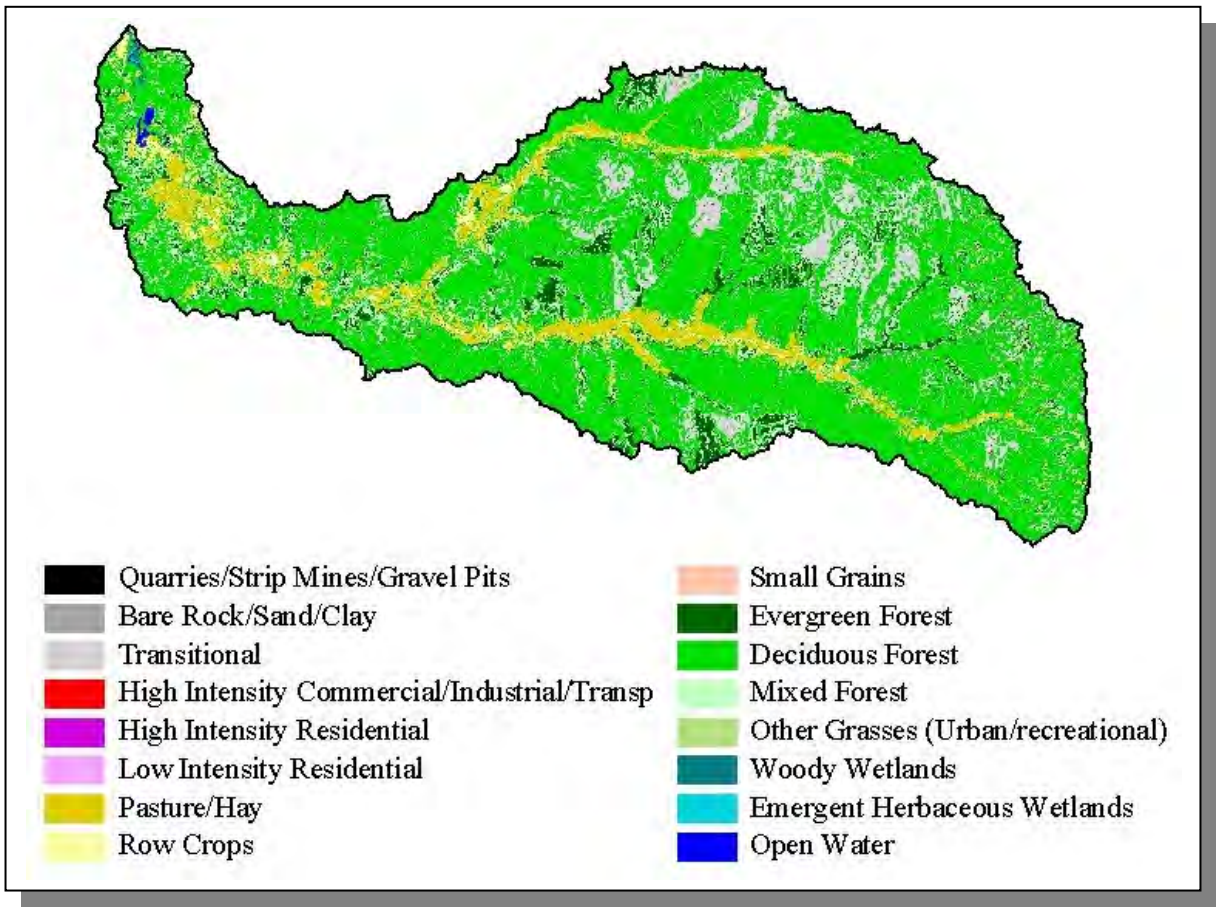


Figure 4-59. Illustration of Land Use Distribution in Subwatershed 0604000106.

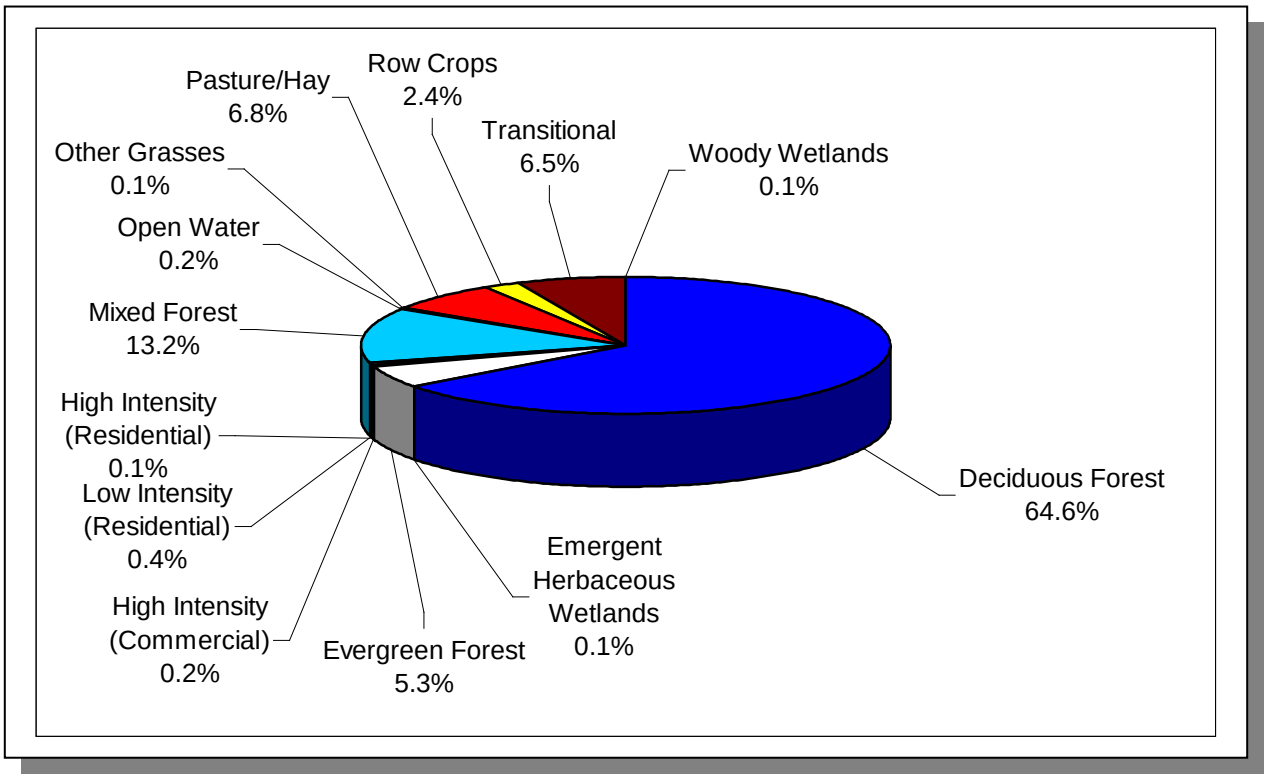


Figure 4-60. Land Use Distribution in Subwatershed 0604000106. *More information is provided in Appendix IV.*

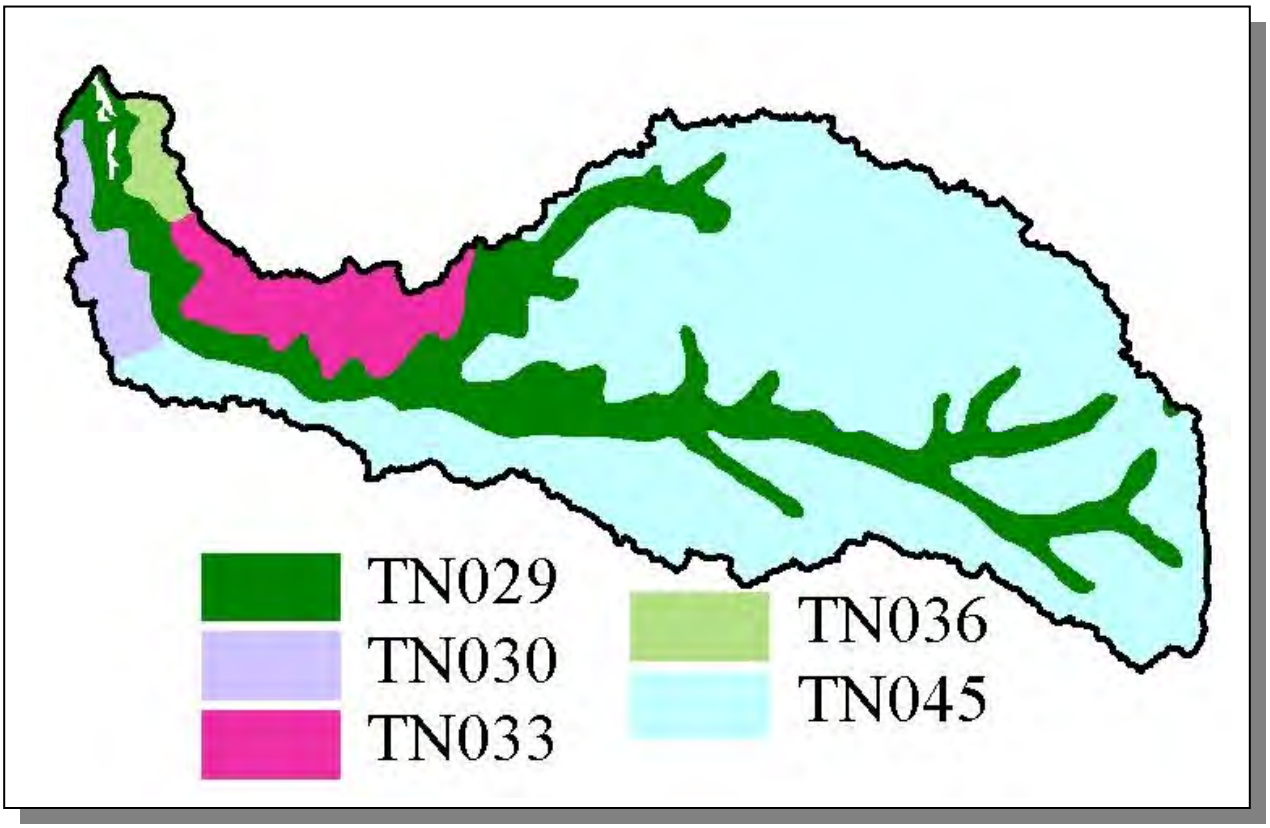


Figure 4-61. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000106.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN029	8.00	C	2.96	5.40	Loam	0.33
TN030	2.00	B	1.84	5.06	Loam	0.33
TN033	0.00	B	2.29	5.32	Loam	0.32
TN036	0.00	C	1.30	5.04	Silty Loam	0.36
TN045	0.00	B	1.95	5.45	Loam	0.35

Table 4-37. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000106. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Hardin	22,633	24,816	25,578	3.10	701	769	792	13.0
Wayne	13,935	16,498	16,842	10.81	1,506	1,783	1,820	20.8
Totals	**36,568**	**41,314**	**42,420**		**2,207**	**2,552**	**2,612**	**18.4**

Table 4-38. Population Estimates in Subwatershed 0604000106.

Figure 4-62. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

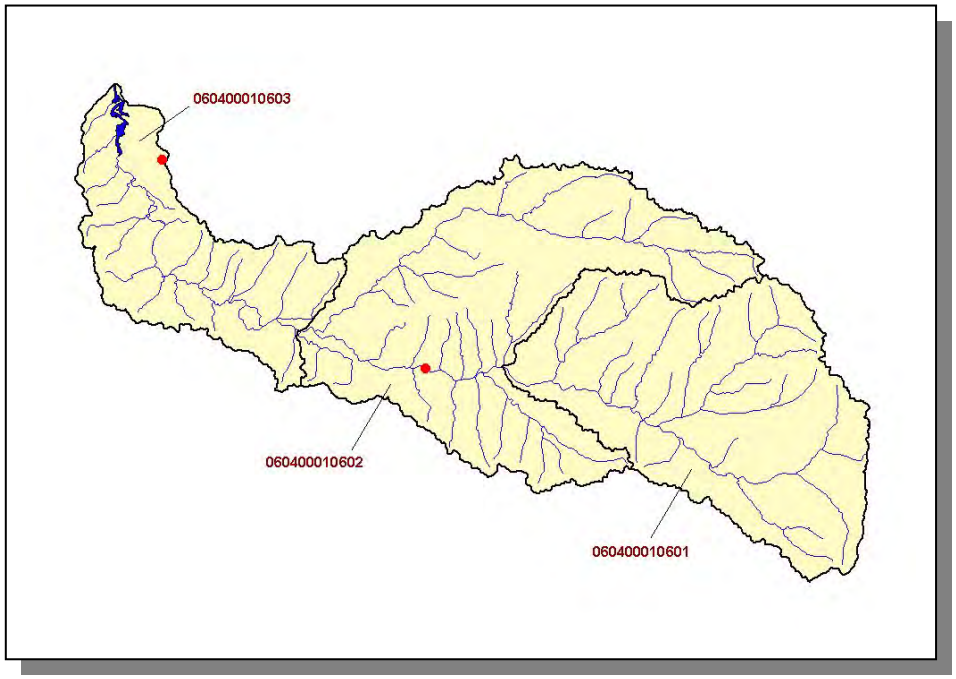


Figure 4-63. Location of STORET Monitoring Sites in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.F.ii. Point Source Contributions.

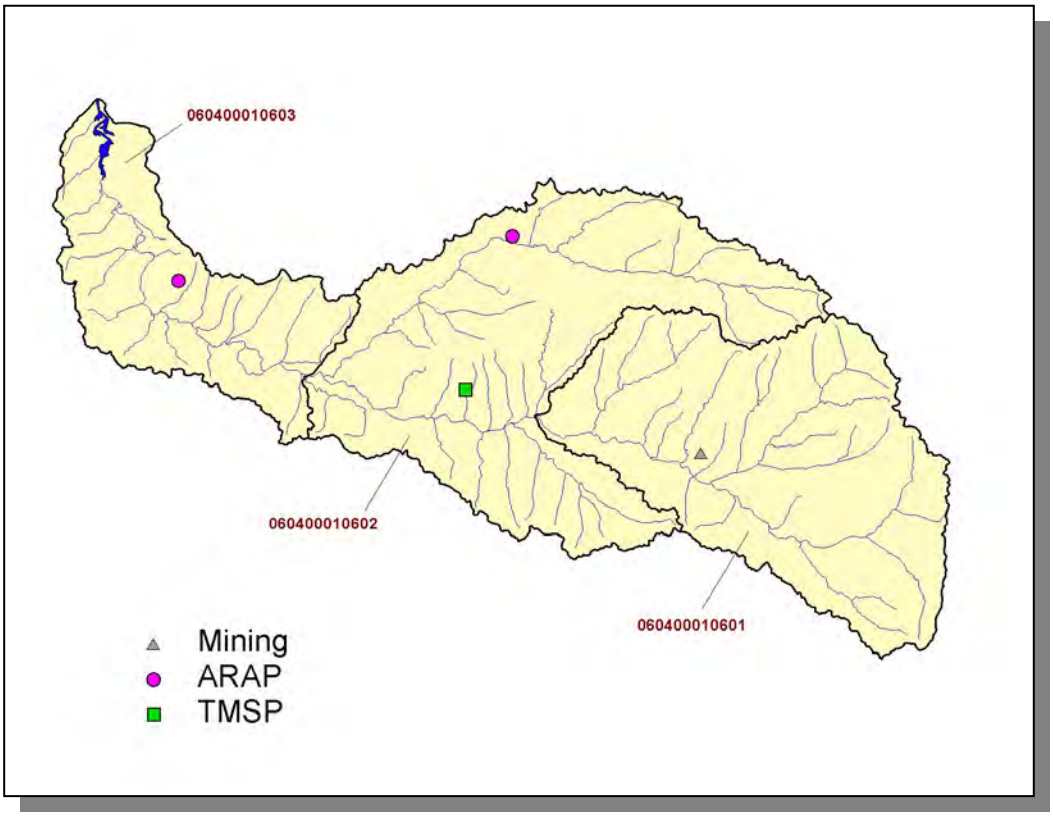


Figure 4-64. Location of Active Point Source Facilities in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information is provided in Appendix IV.*

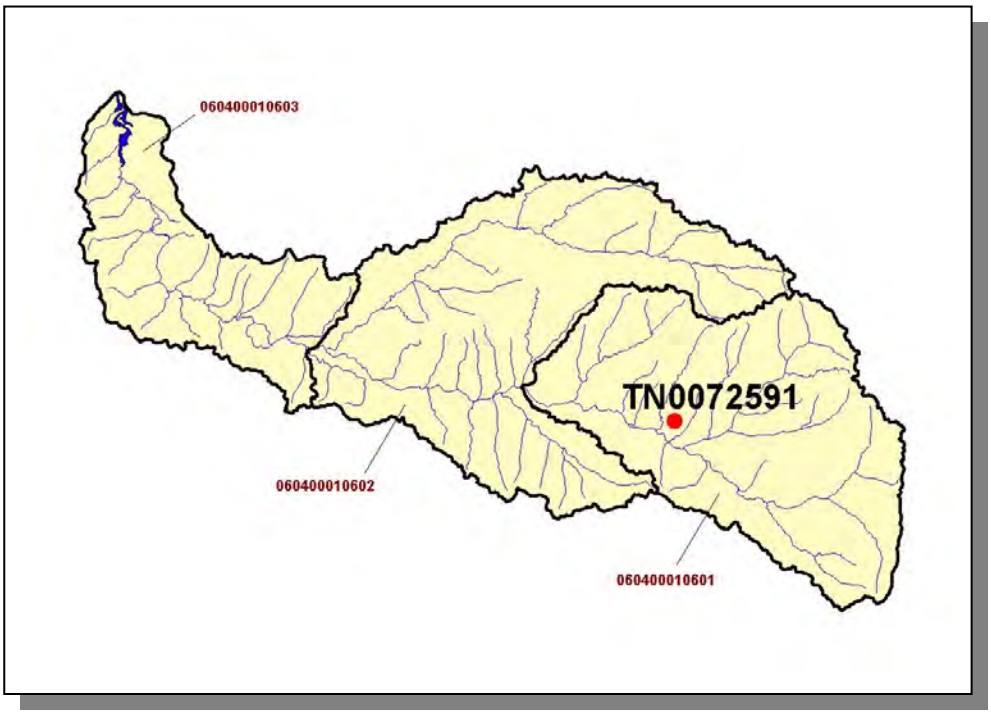


Figure 4-65. Location of Active Mining Facilities in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information is provided in Appendix IV.*

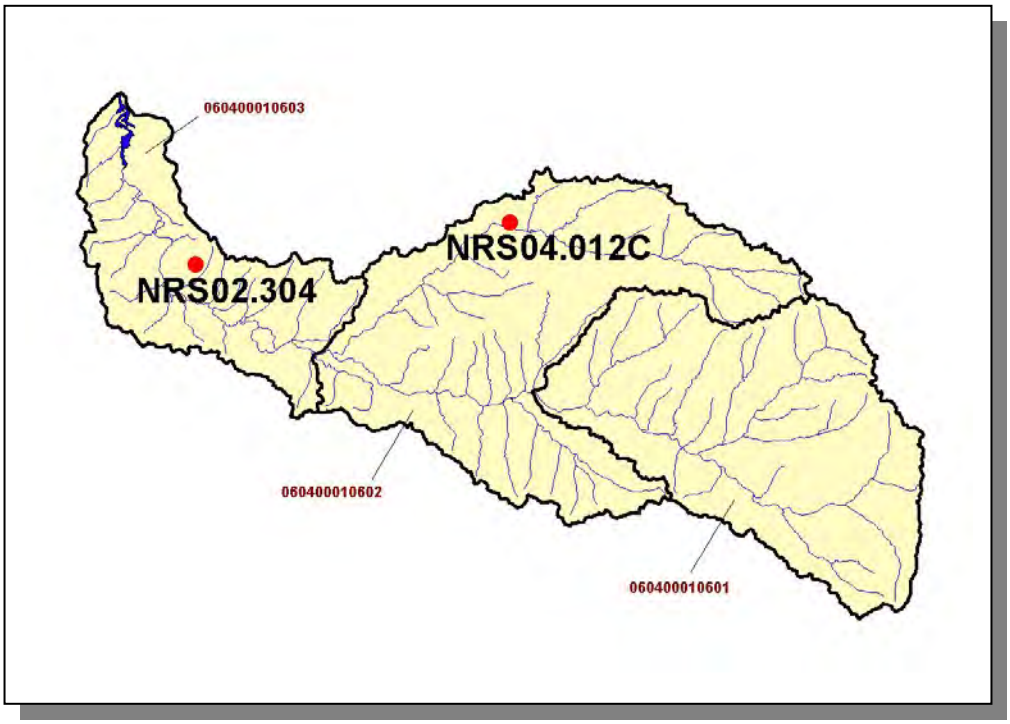


Figure 4-66. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information is provided in Appendix IV.*

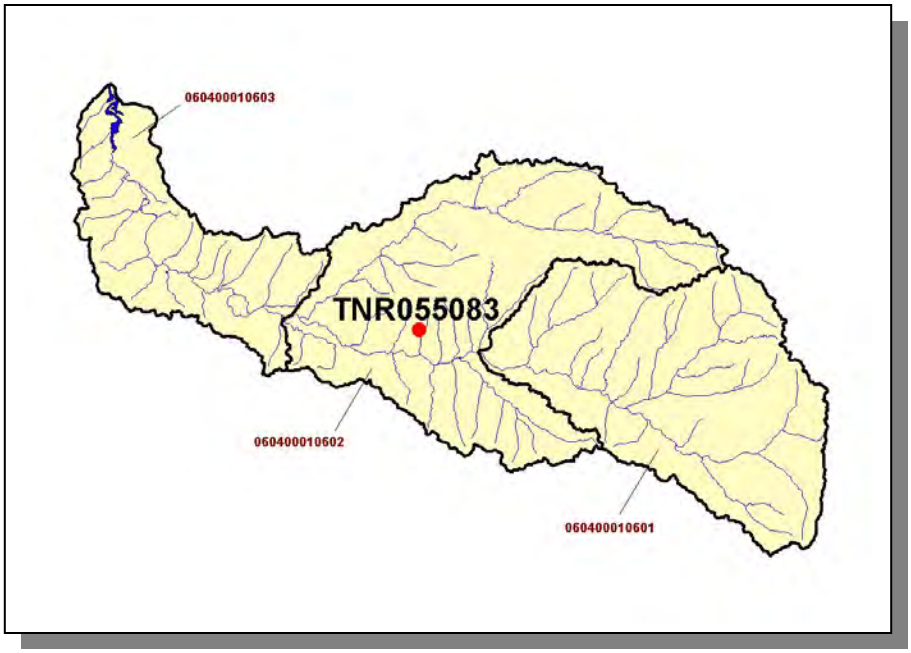


Figure 4-67. Location of TMSP Facilities in Subwatershed 0604000106. *Subwatershed 060400010601, 060400010602, and 060400010603 boundaries are shown for reference. More information is provided in Appendix IV.*

4.2.F.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Milk Cow	Cattle	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
1,230	<5	2,225	<5	<5	290	12

Table 4-39. Summary of Livestock Count Estimates in Subwatershed 0604000106. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6
Wayne	372.6	372.6	14.1	41.1
Total	**592.5**	**592.5**	**20.6**	**68.7**

Table 4-40. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0604000106.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.20
Grass (Hayland)	0.22
Legumes, Grass (Hayland)	0.46
Grass, Forbs, Legumes (Mixed Pasture)	0.65
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	7.19
Cotton (Row Crops)	2.63
Soybeans (Row Crops)	13.10
Wheat (Close-Grown Cropland)	3.93
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	9.54
Conservation Reserve Program Lands	0.35
Non-Agricultural Land Use	0.00
Farmsteads and Ranch Headquarters	0.77

Table 4-41. Annual Estimated Total Soil Loss in Subwatershed 0604000106.

4.2.G. 0604000107 (Tennessee River).

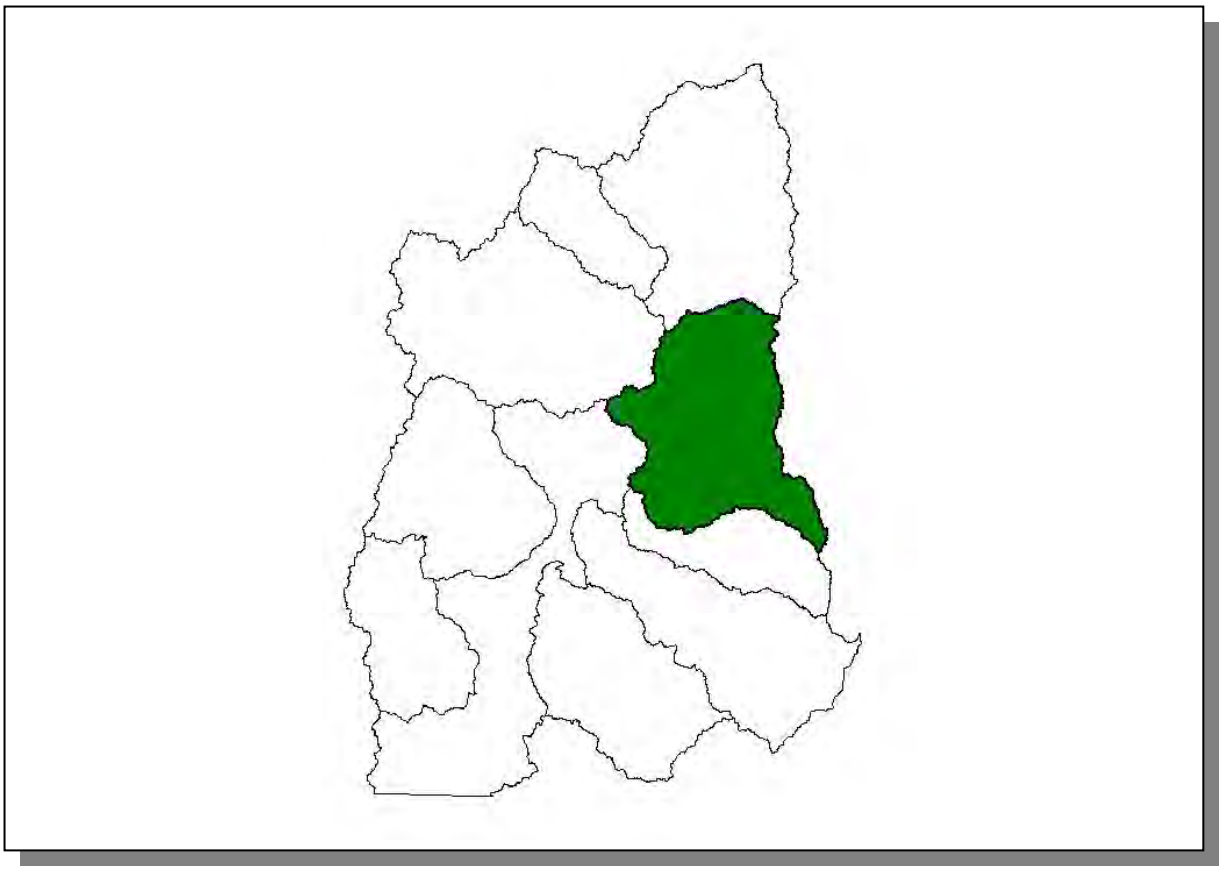


Figure 4-68. Location of Subwatershed 0604000107. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.G.i. General Description.

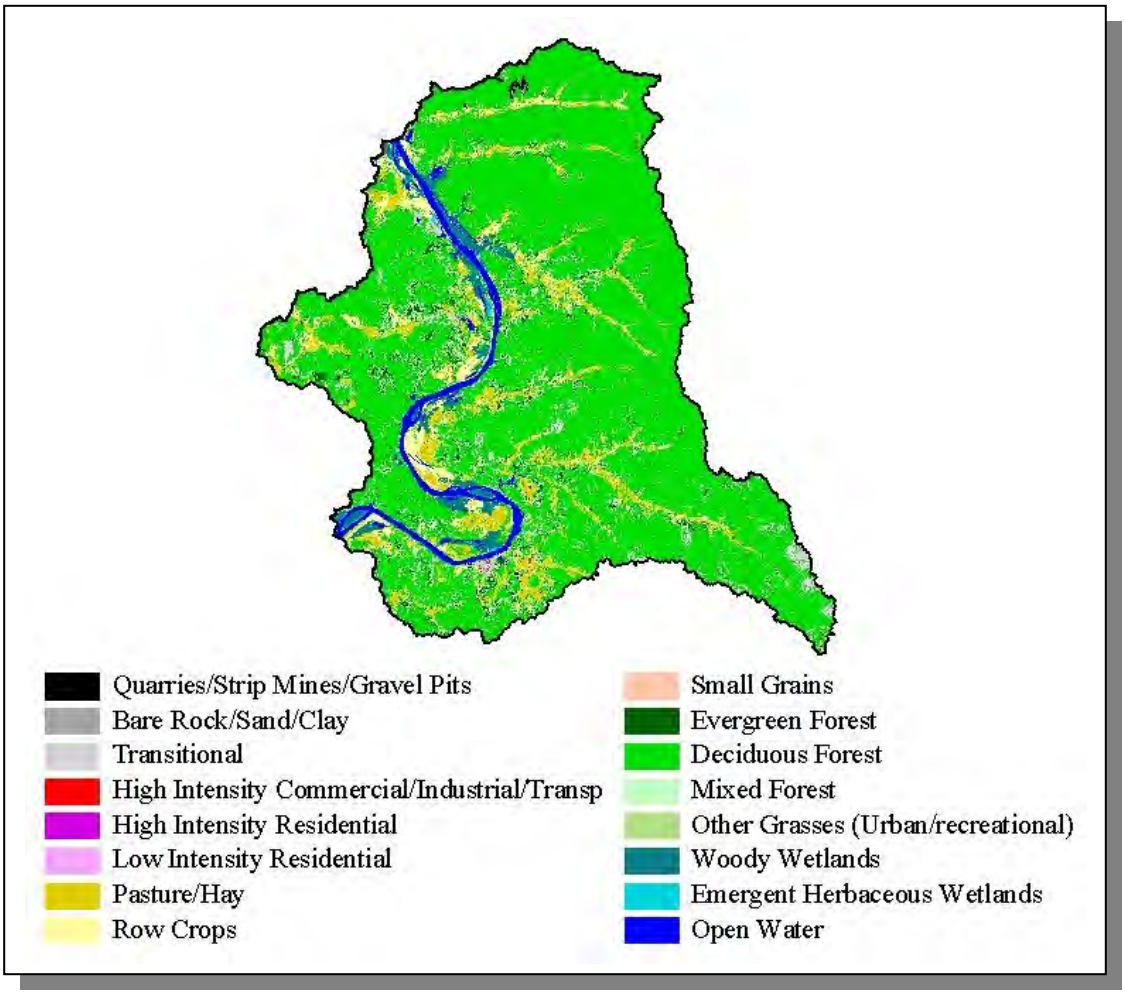


Figure 4-69. Illustration of Land Use Distribution in Subwatershed 0604000107.

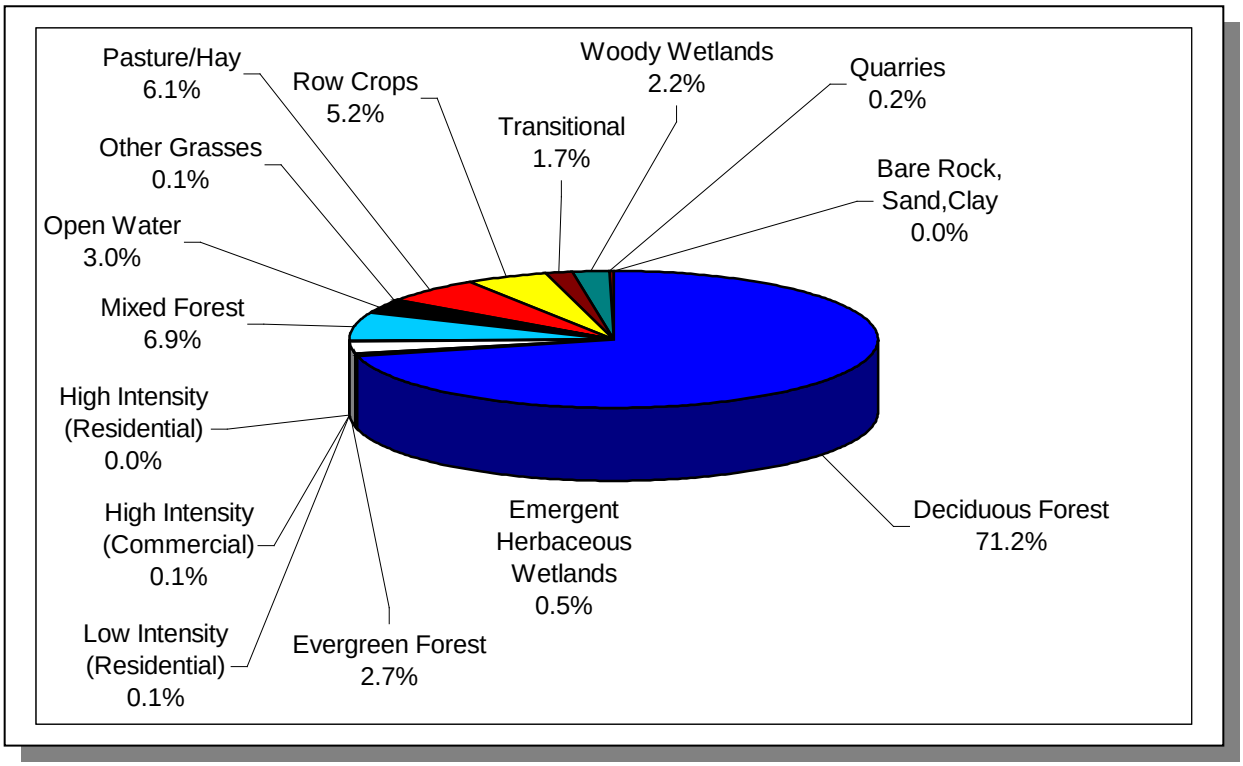


Figure 4-70. Land Use Distribution in Subwatershed 0604000107. *More information is provided in Appendix IV.*

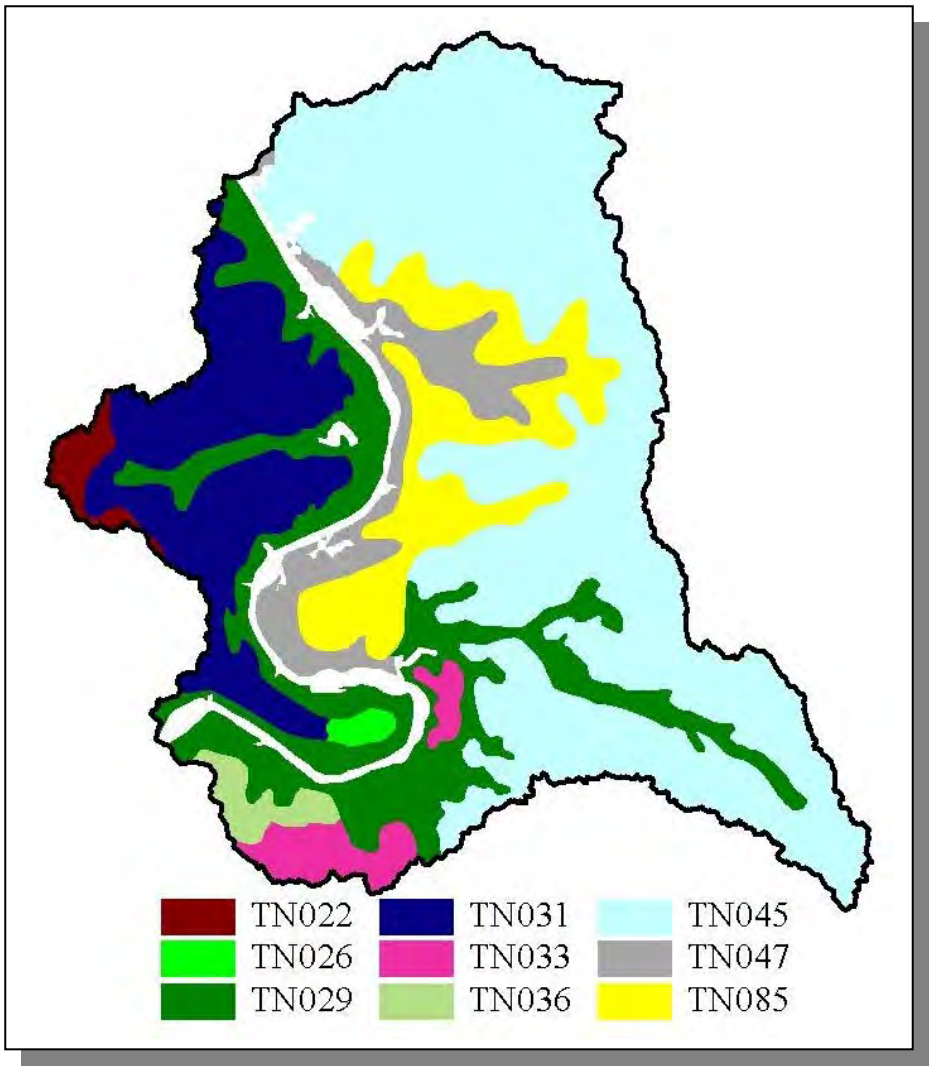


Figure 4-71. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000107.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN022	5.00	C	1.98	5.07	Loam	0.37
TN026	0.00	B	1.52	5.13	Silty Loam	0.40
TN029	8.00	C	2.96	5.40	Loam	0.33
TN031	0.00	C	3.27	4.88	Loam	0.33
TN033	0.00	B	2.29	5.32	Loam	0.32
TN036	0.00	C	1.30	5.04	Silty Loam	0.36
TN045	0.00	B	1.95	5.45	Loam	0.35
TN047	21.00	C	1.62	5.73	Silty Loam	0.37
TN085	0.00	C	1.60	4.89	Clayey Loam	0.30

Table 4-42. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000107. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Decatur	10,472	10,799	11,731	18.24	191	197	2,140	12.0
Hardin	22,633	24,816	25,578	1.93	437	480	494	13.0
Perry	6,612	7,438	7,631	22.75	1,505	1,693	1,736	15.3
Wayne	13,935	16,498	16,842	10.47	1,459	1,727	1,763	20.8
Totals	**53,652**	**59,551**	**61,782**		**5,312**	**5,870**	**6,133**	**15.5**

Table 4-43. Population Estimates in Subwatershed 0604000107.

NUMBER OF HOUSING UNITS						
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Clifton	Wayne	651	281	257	21	3

Table 4-44. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000107.

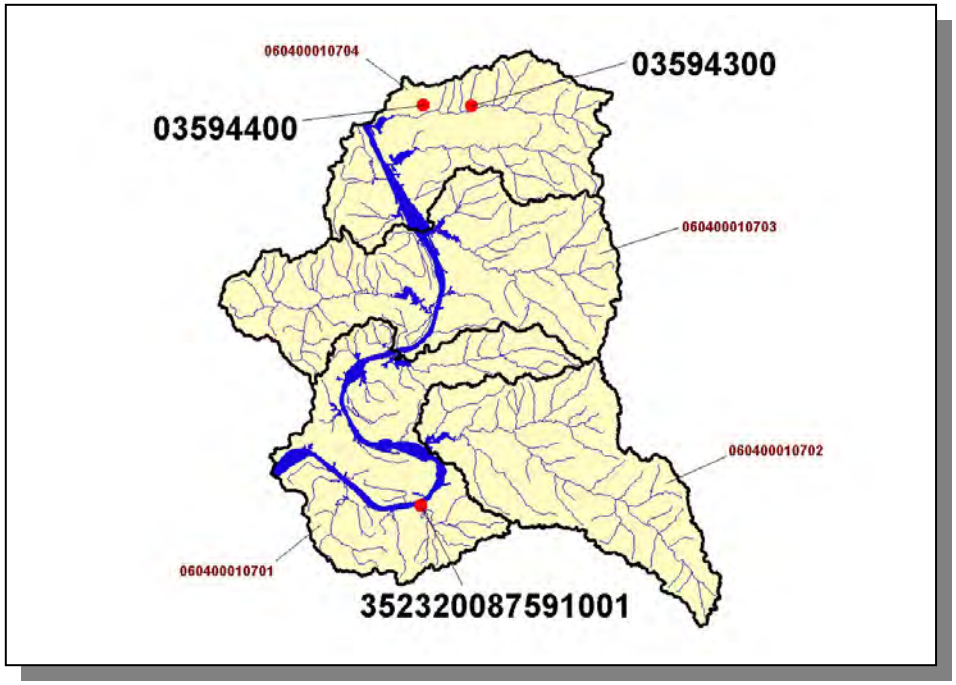


Figure 4-72. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information is provided in Appendix IV.*

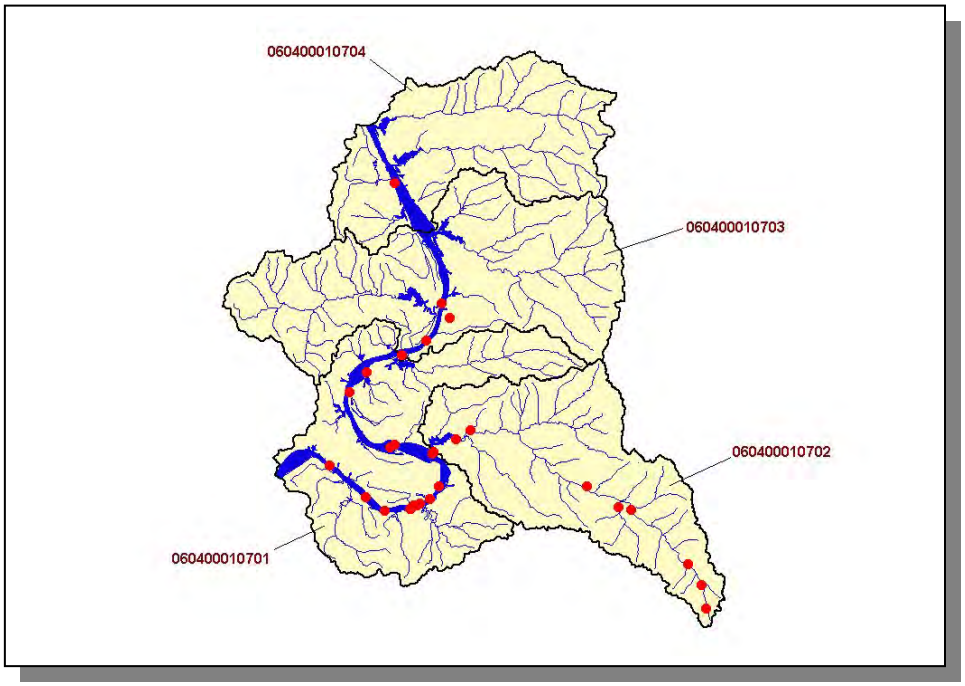


Figure 4-73. Location of STORET Monitoring Sites in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.G.ii. Point Source Contributions.

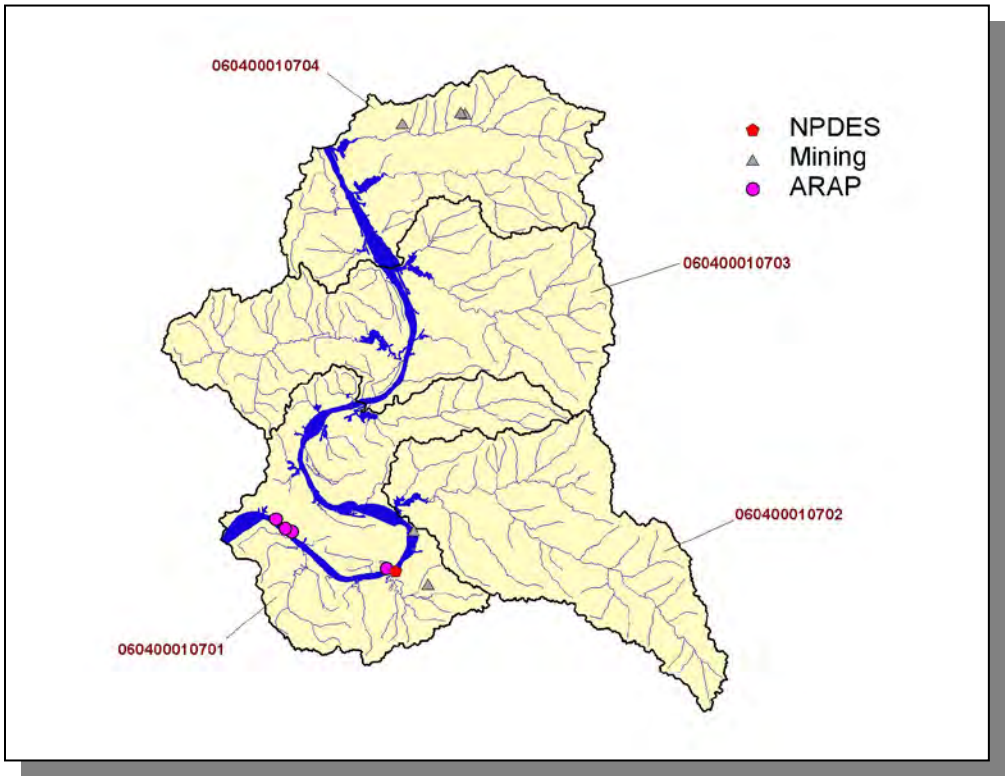


Figure 4-74. Location of Active Point Source Facilities in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

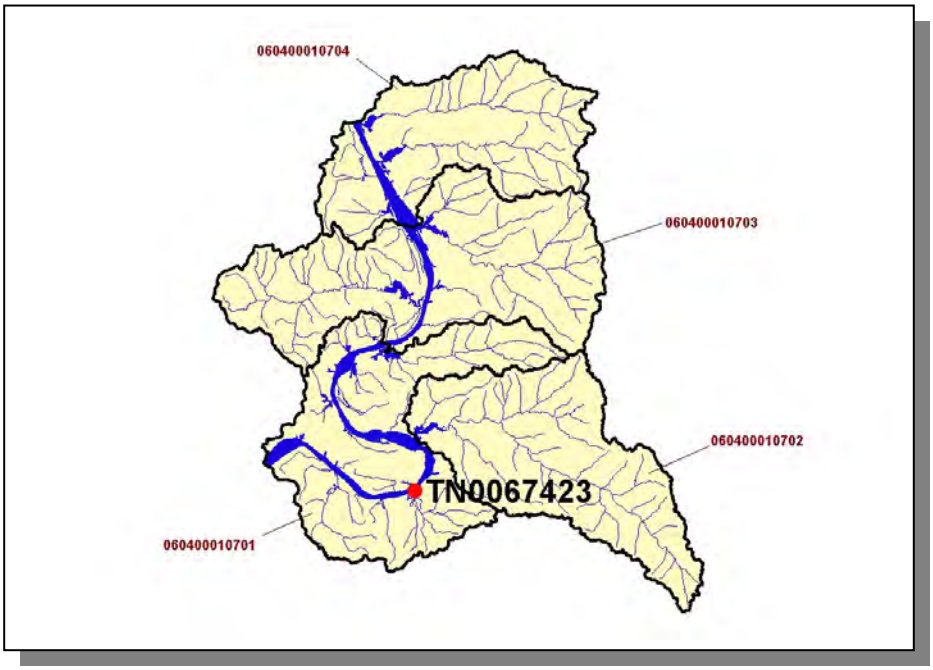


Figure 4-75. Location of NPDES Facilities in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

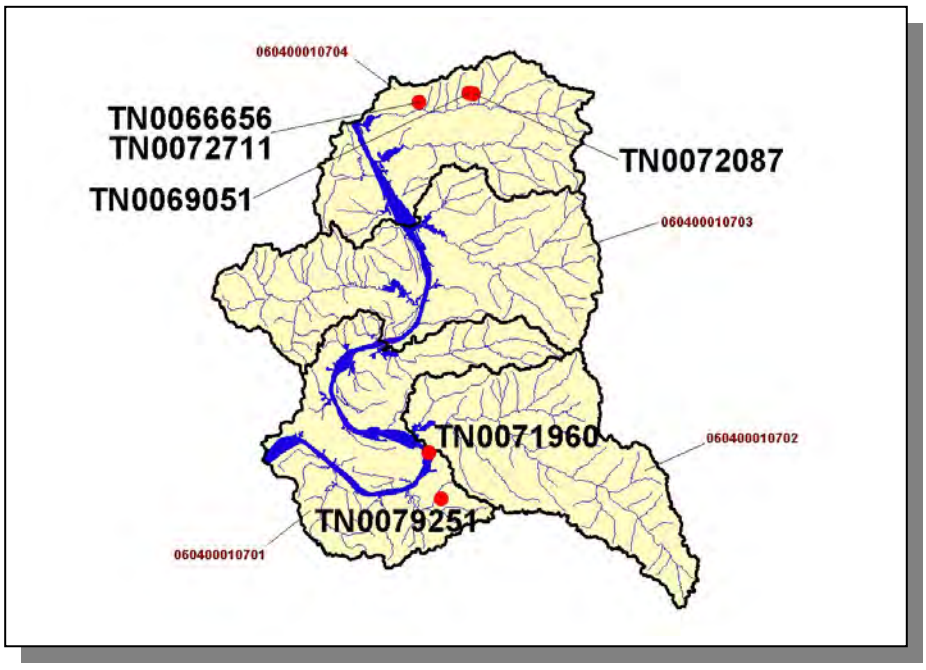


Figure 4-76. Location of Active Mining Facilities in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

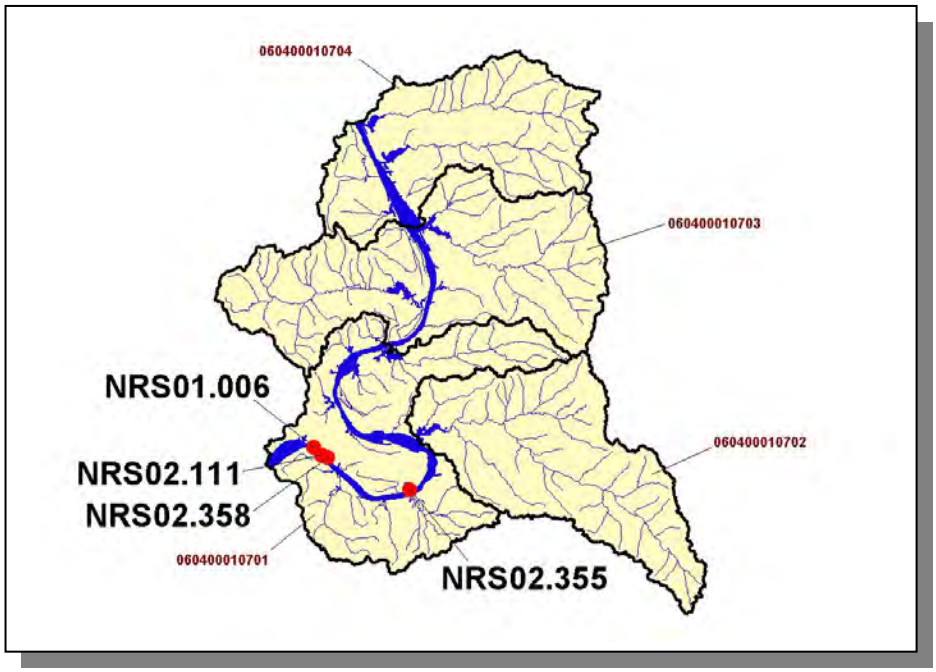


Figure 4-77. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000107. *Subwatershed 060400010701, 060400010702, 060400010703, and 060400010704 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.G.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,574	4,843	5	7	<5	804	23

Table 4-45. Summary of Livestock Count Estimates in Subwatershed 0604000107. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hardin	219.9	219.9	6.5	27.6
Perry	223.6	223.6	5.1	22.0
Wayne	372.6	372.6	14.1	41.1
Totals	**816.1**	**816.1**	**25.7**	**90.7**

Table 4-46. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000107.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.41
Grass (Pastureland)	0.59
Grass (Hayland)	0.15
Legumes (Hayland)	0.45
Grass, Forbs, Legumes (Mixed Pasture)	0.47
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.36
Cotton (Row Crops)	2.63
Sorghum (Row Crops)	3.17
Soybeans (Row Crops)	7.40
Wheat (Close-Grown Cropland)	3.12
All Other Close-Grown Cropland	5.50
Other Cropland not Planted	5.49
Conservation Reserve Program Lands	0.19
Non-Agricultural Land Use	0.00
Other Land in Farms	0.89
Farmsteads and Ranch Headquarters	0.41

Table 4-47. Annual Estimated Total Soil Loss in Subwatershed 0604000107.

4.2.H. 0604000108 (Beech River).

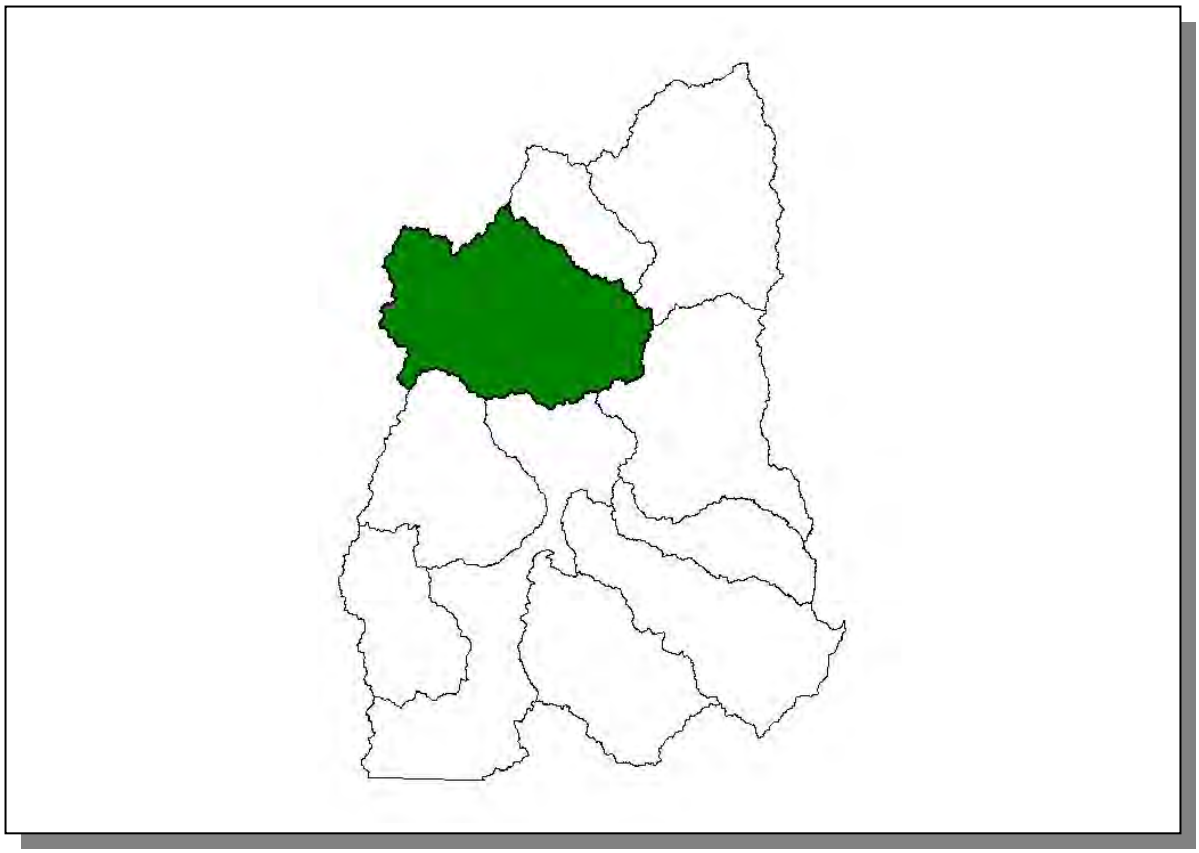


Figure 4-78. Location of Subwatershed 0604000108. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.H.i. General Description.

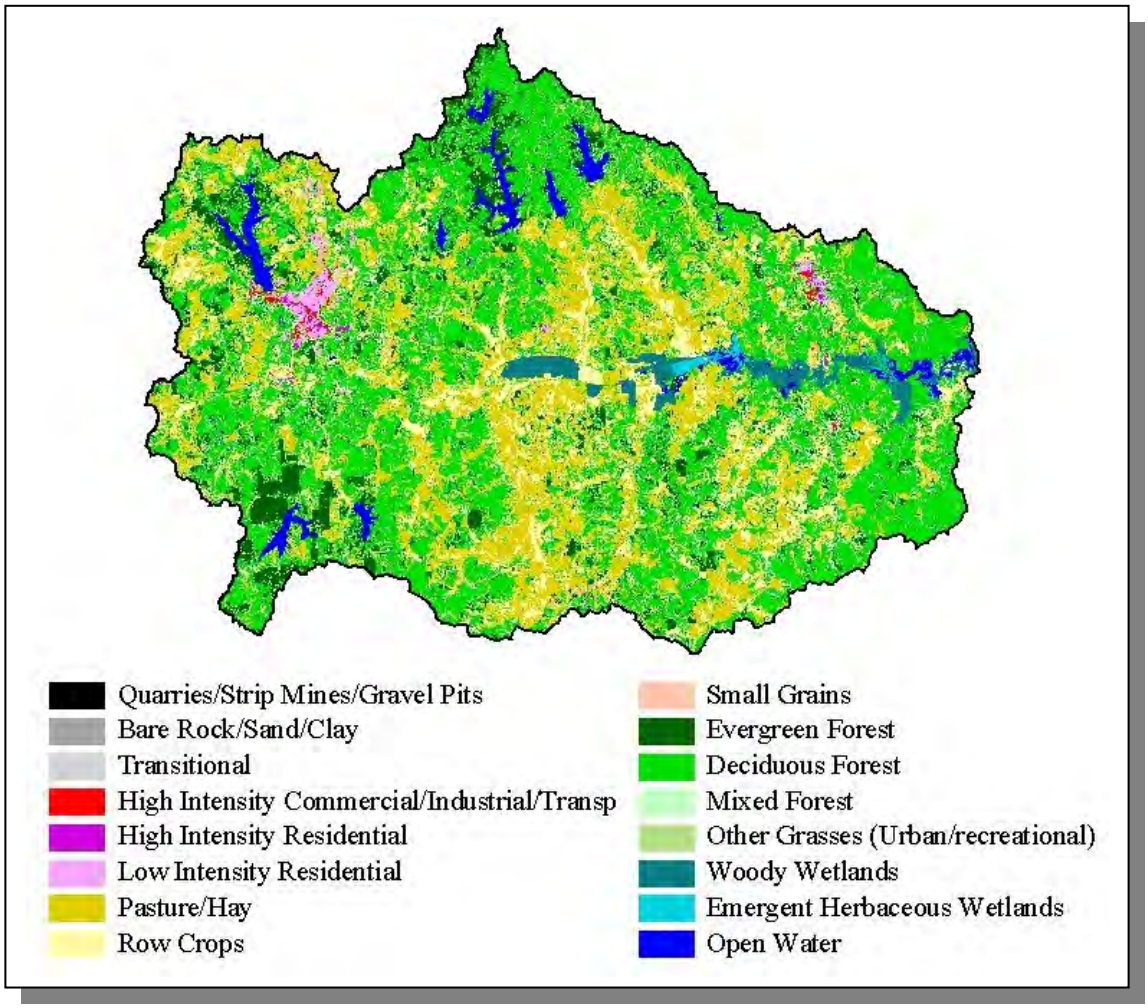


Figure 4-79. Illustration of Land Use Distribution in Subwatershed 0604000108.

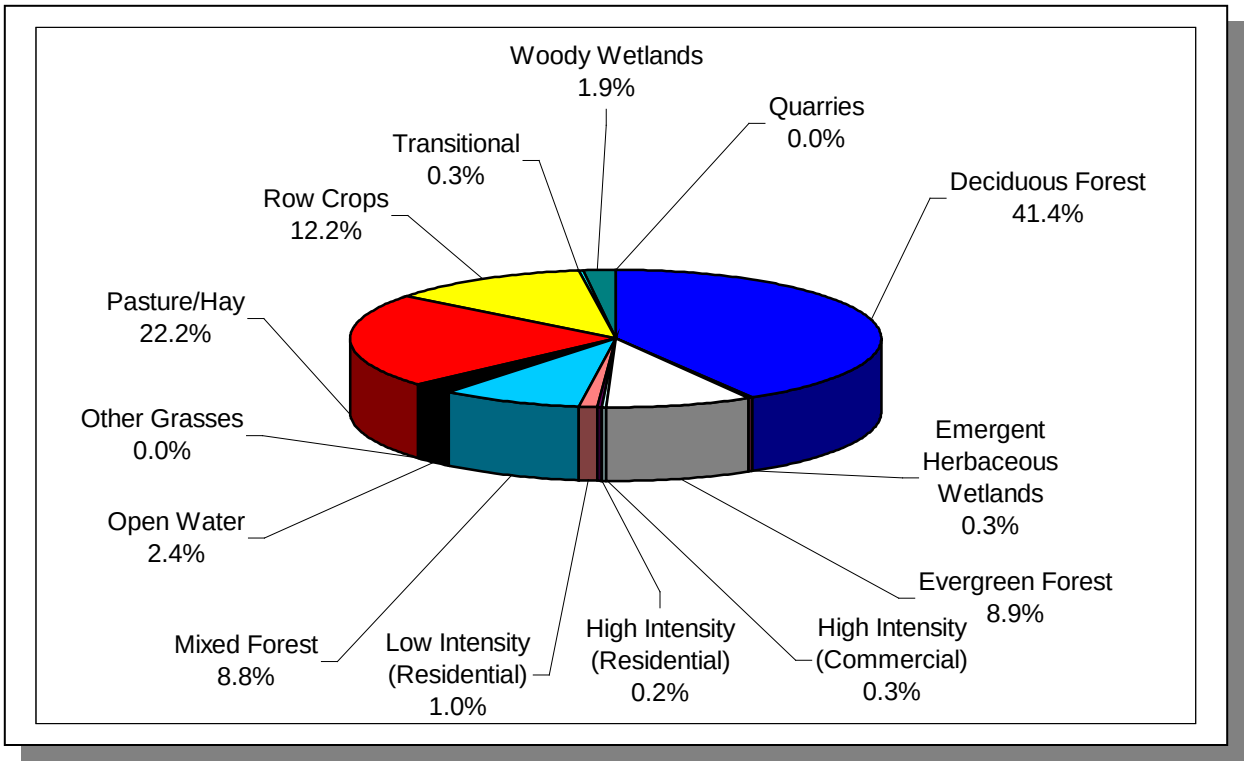


Figure 4-80. Land Use Distribution in Subwatershed 0604000108. *More information is provided in Appendix IV.*

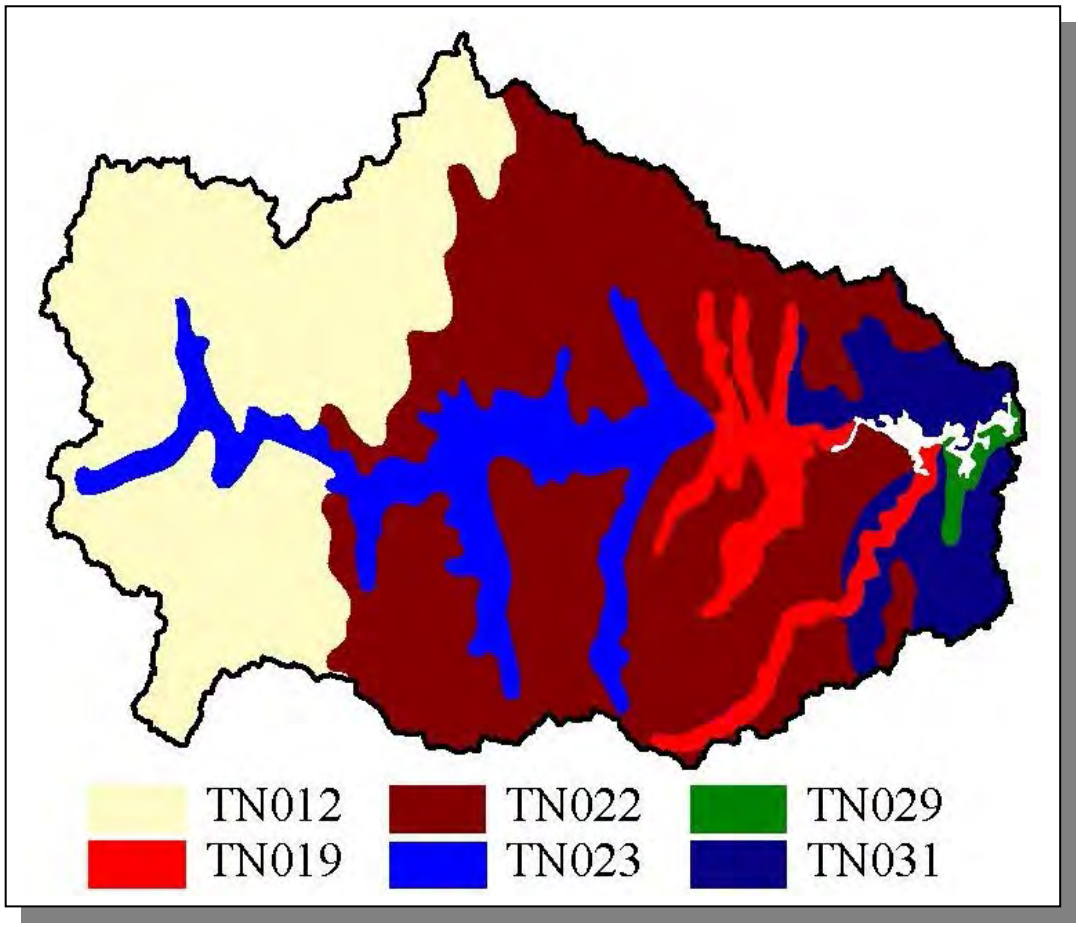


Figure 4-81. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000108.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN019	62.00	C	1.54	4.76	Loam	0.26
TN022	5.00	C	1.98	5.07	Loam	0.37
TN023	17.00	C	1.35	5.12	Silty Loam	0.42
TN029	8.00	C	2.96	5.40	Loam	0.33
TN031	0.00	C	3.27	4.88	Loam	0.33

Table 4-48. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000108. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Decatur	10,472	10,799	11,731	26.01	2,724	2,809	3,051	12.0
Henderson	21,844	24,000	25,522	40.2	8,782	9,648	10,260	16.8
Totals	**32,316**	**34,799**	**37,253**		**11,506**	**12,457**	**13,311**	**15.7**

Table 4-49. Population Estimates in Subwatershed 0604000108.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Decaturville	Decatur	863	378	312	64	2
Lexington	Henderson	5,810	2,612	2,476	125	11
Parsons	Decatur	2,033	928	698	226	4
Scott's Hill	Henderson	611	297	12	278	7
Total		**9,317**	**4,215**	**3,498**	**693**	**24**

Table 4-50. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000108.

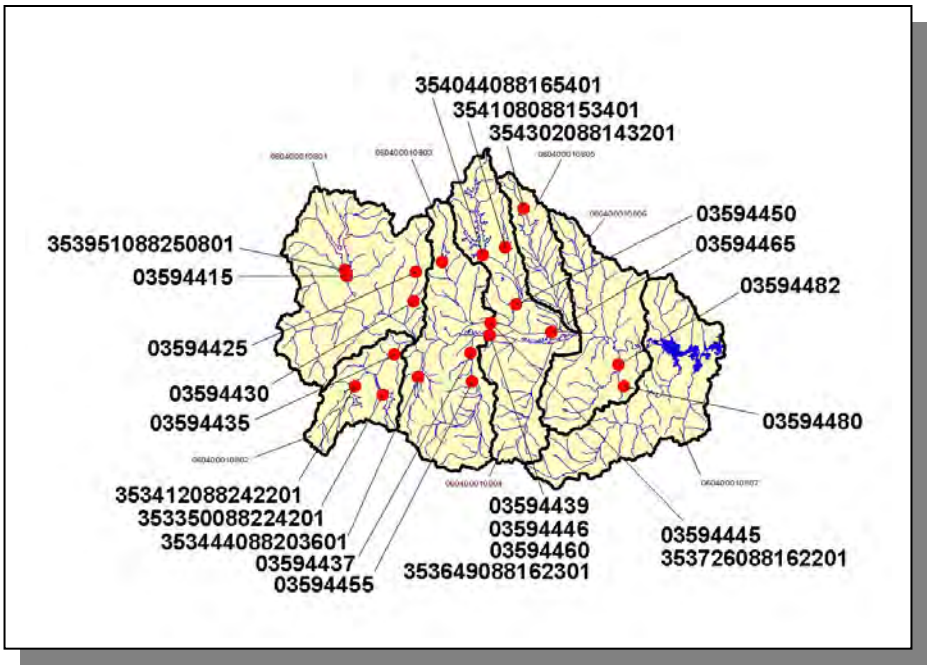


Figure 4-82. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806 and 060400010807 boundaries are shown for reference. More information is provided in Appendix IV.*

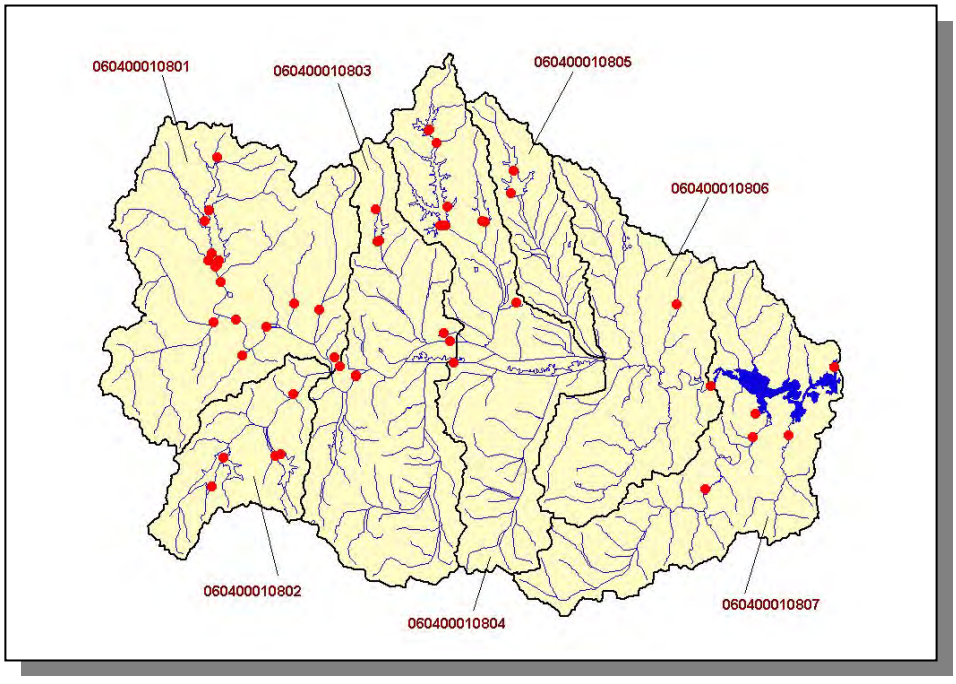


Figure 4-83. Location of STORET Monitoring Sites in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806 and 060400010807 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.H.ii. Point Source Contributions.

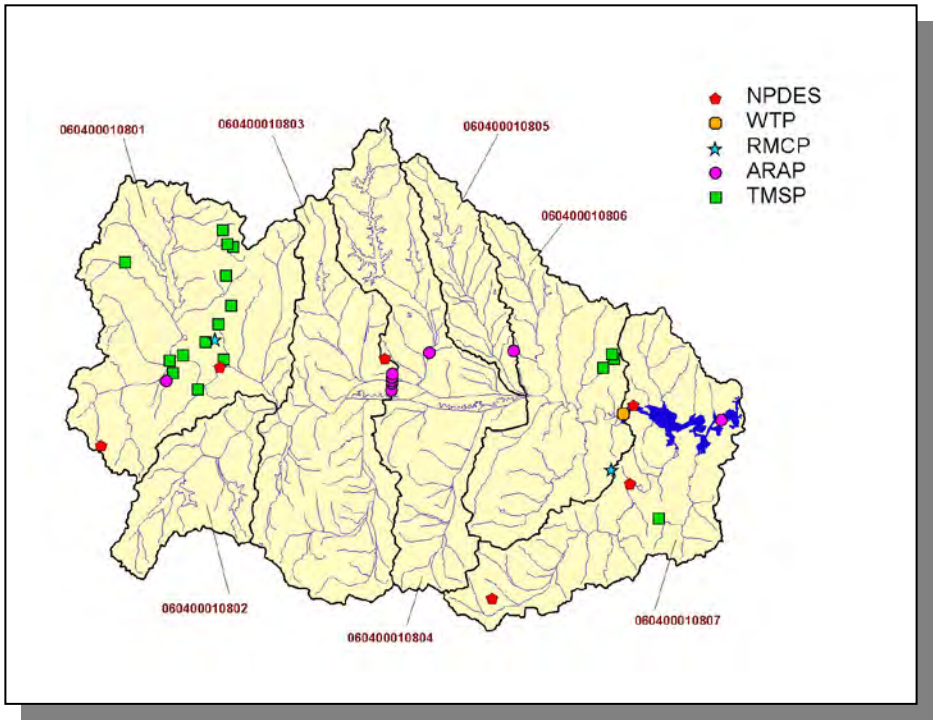


Figure 4-84. Location of Active Point Source Facilities in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

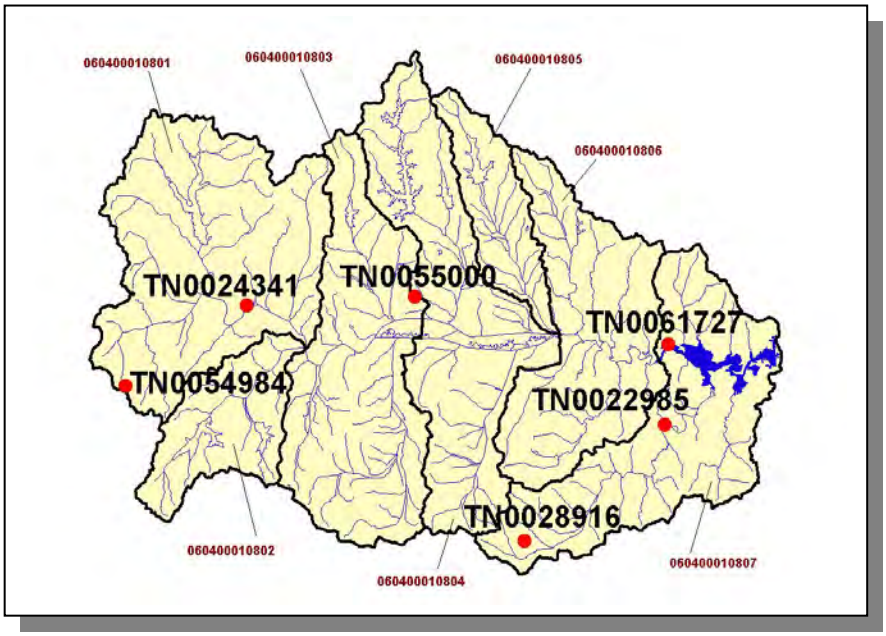


Figure 4-85. Location of NPDES Facilities in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

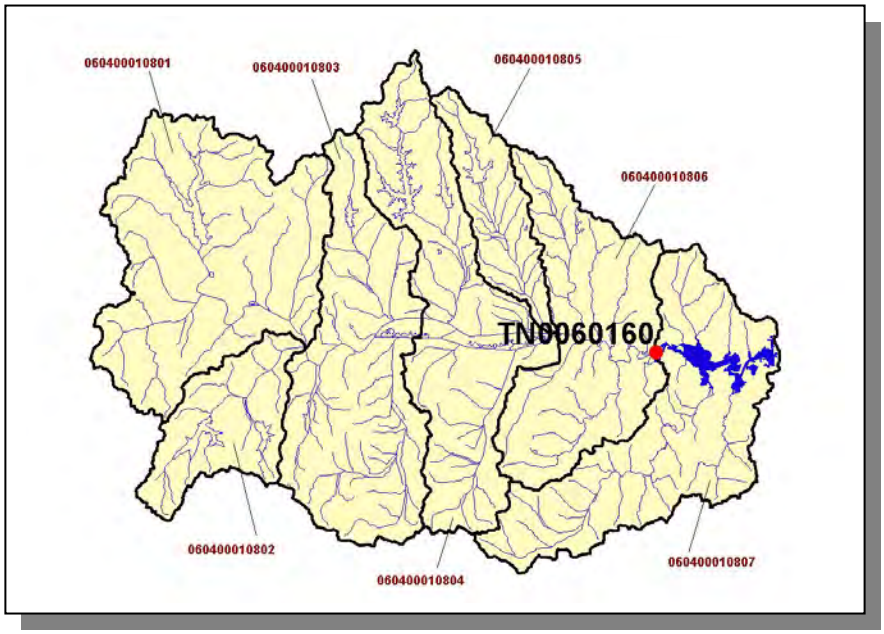


Figure 4-86. Location of Water Treatment Plants in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

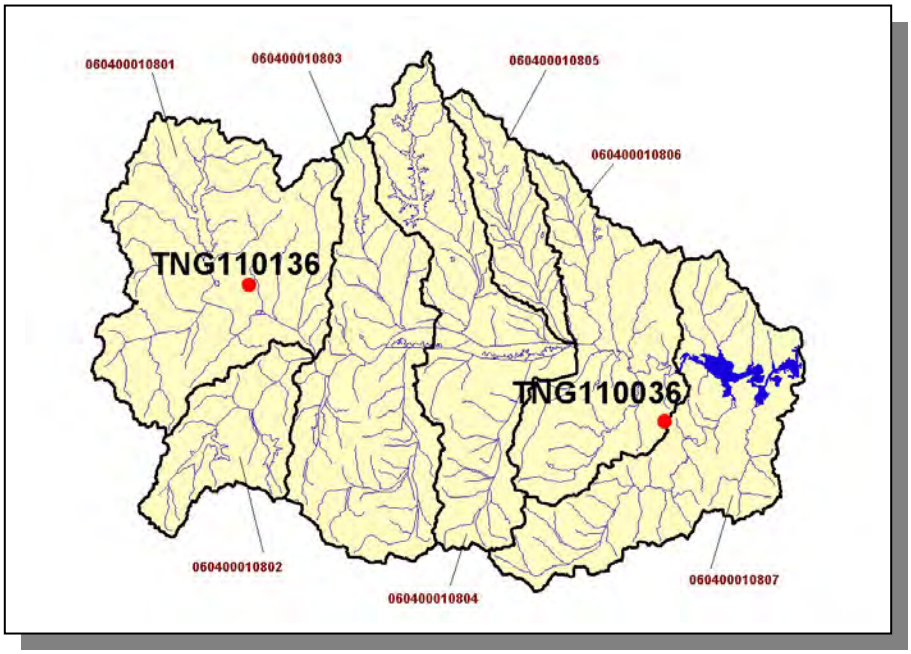


Figure 4-87. Location of Ready Mix Concrete Plants in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

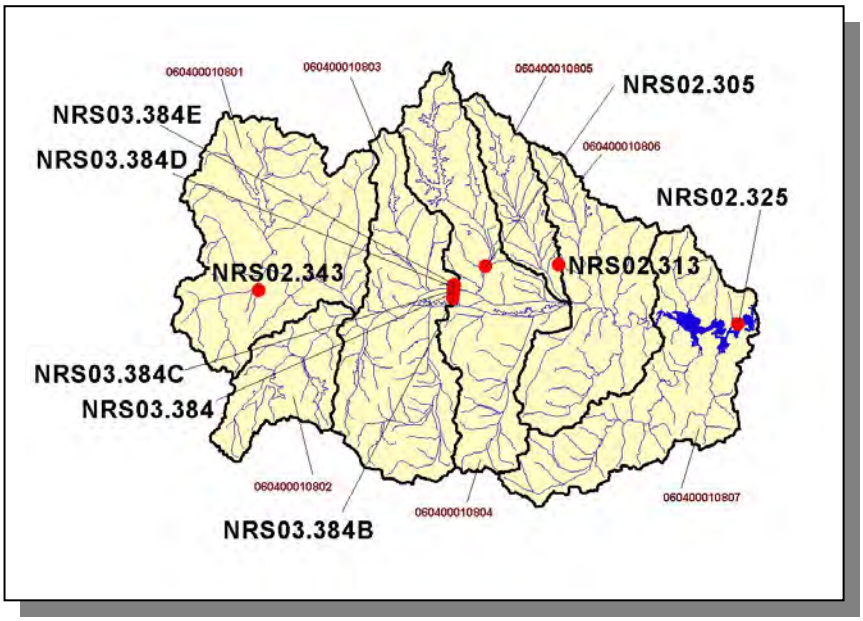


Figure 4-88. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

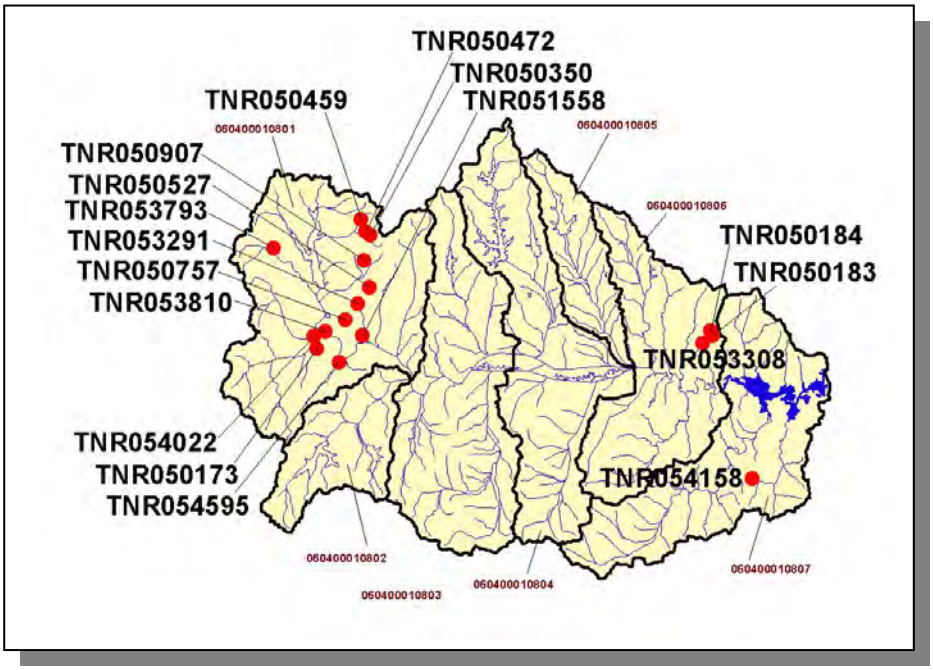


Figure 4-89. Location of TMSP Facilities in Subwatershed 0604000108. *Subwatershed 060400010801, 060400010802, 060400010803, 060400010804, 060400010805, 060400010806, and 060400010807 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.H.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
8,349	17,878	33	17	<5	5,999	121

Table 4-51. Summary of Livestock Count Estimates in Subwatershed 0604000108. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Henderson	158.5	158.5	3.6	12.8

Table 4-52. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000108.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.41
Grass (Pastureland)	0.85
Grass (Hayland)	0.06
Legumes (Hayland)	0.45
Grass, Forbs, Legumes (Mixed Pasture)	1.29
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	5.73
Cotton (Row Crops)	5.27
Sorghum (Row Crops)	1.71
Soybeans (Row Crops)	6.29
Wheat (Close-Grown Cropland)	2.98
Other Cropland not Planted	6.13
Conservation Reserve Program Lands	0.34
Non-Agricultural Land Use	0.00
Other Land in Farms	0.43
Farmsteads and Ranch Headquarters	0.40

Table 4-53. Annual Estimated Total Soil Loss in Subwatershed 0604000108.

4.2.I. 0604000109 (Tennessee River).

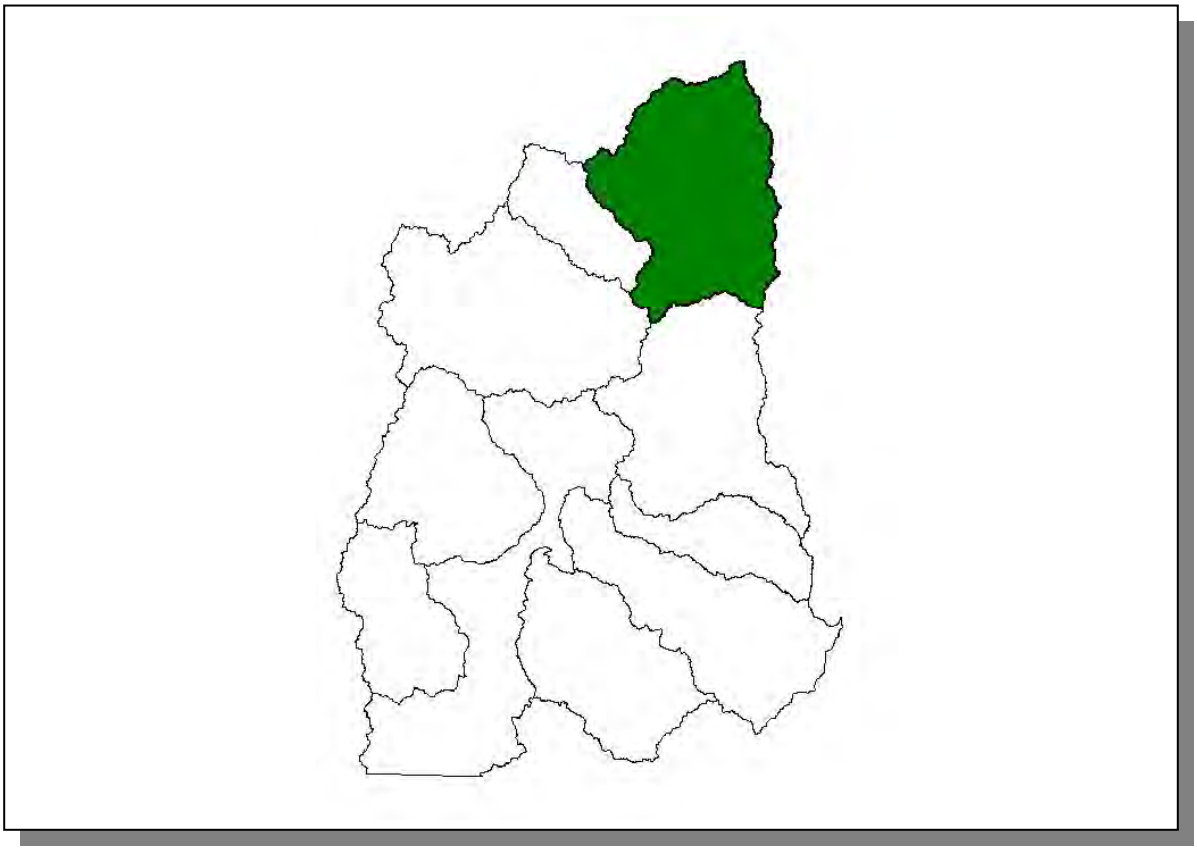


Figure 4-90. Location of Subwatershed 0604000109. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.I.i. General Description.

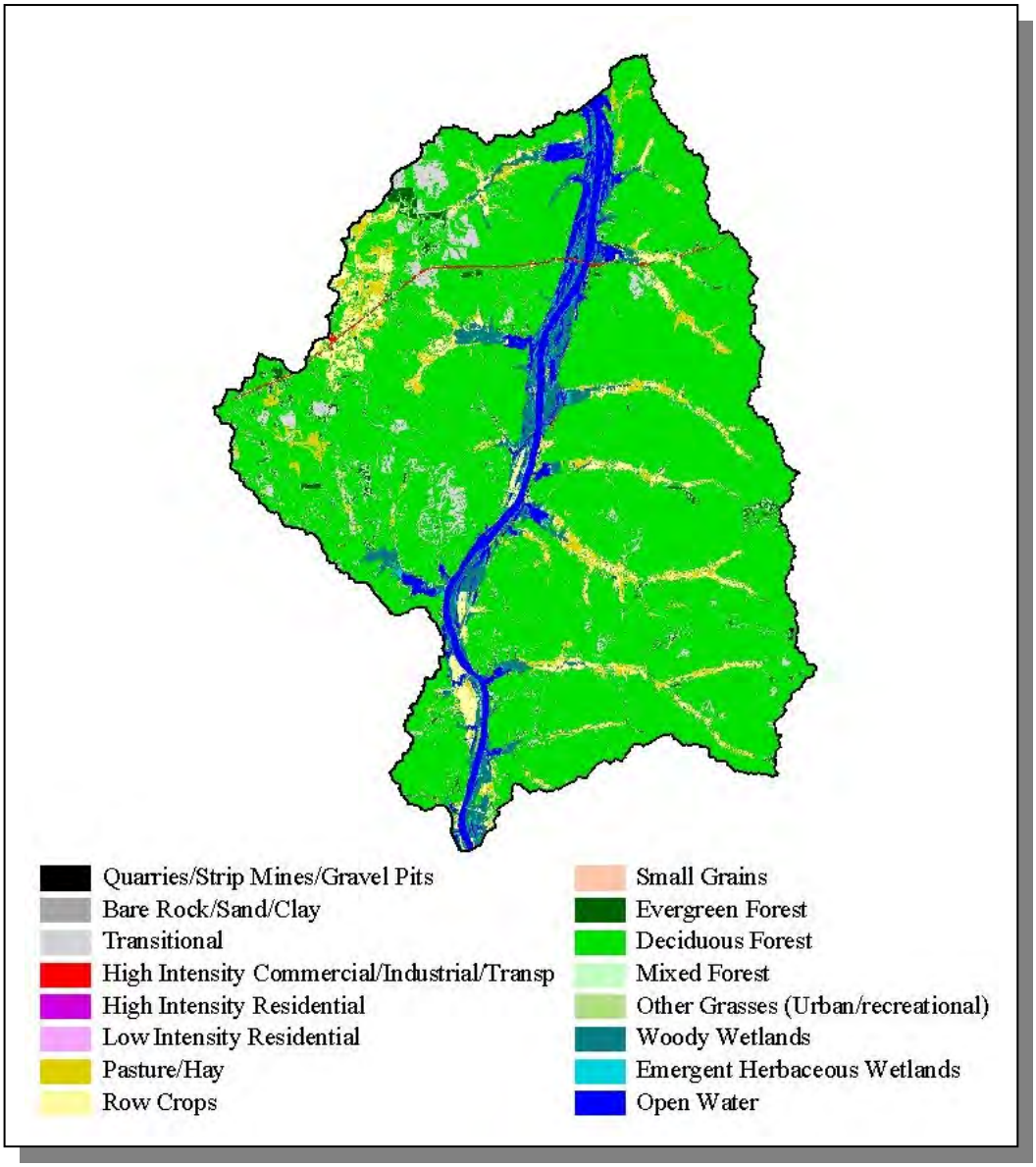


Figure 4-91. Illustration of Land Use Distribution in Subwatershed 0604000109.

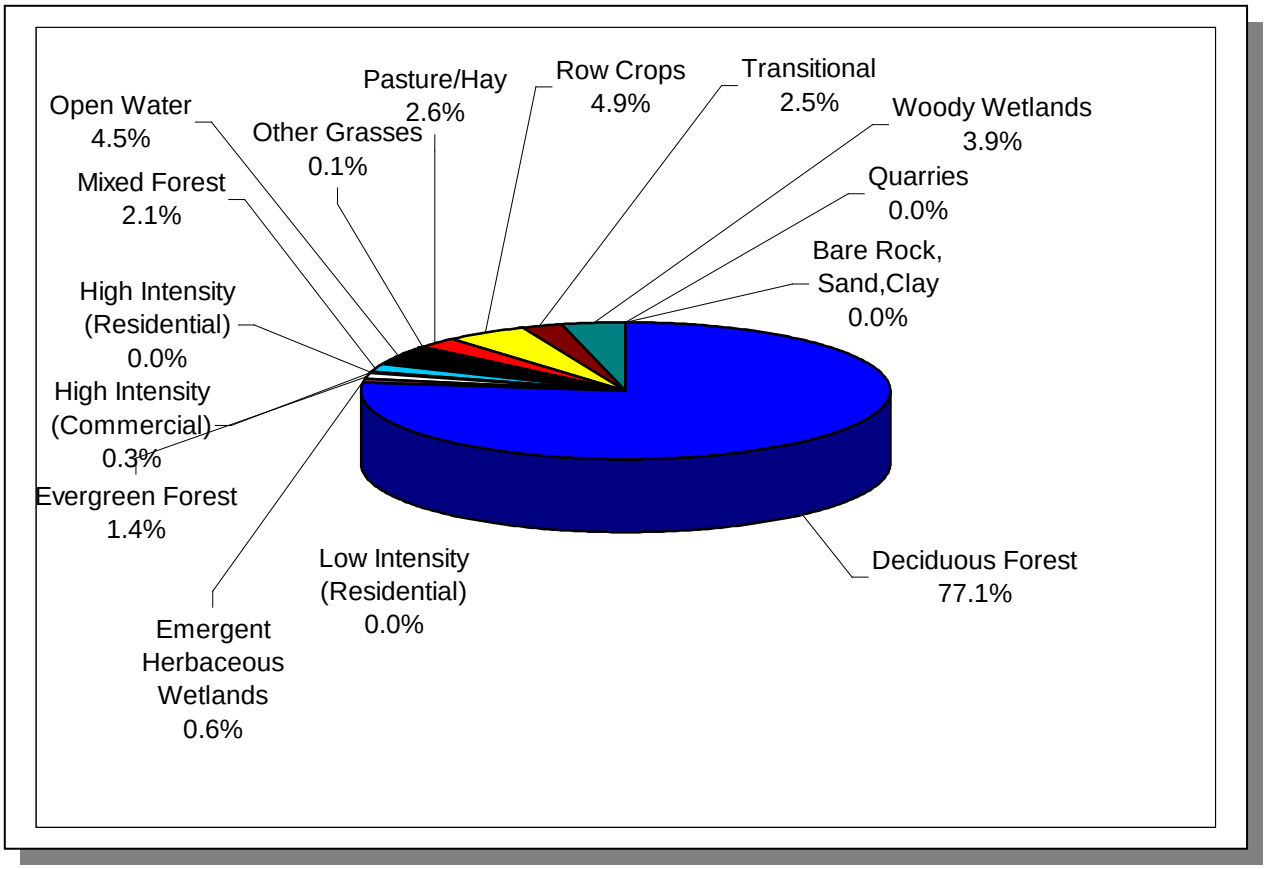


Figure 4-92. Land Use Distribution in Subwatershed 0604000109. *More information is provided in Appendix IV.*

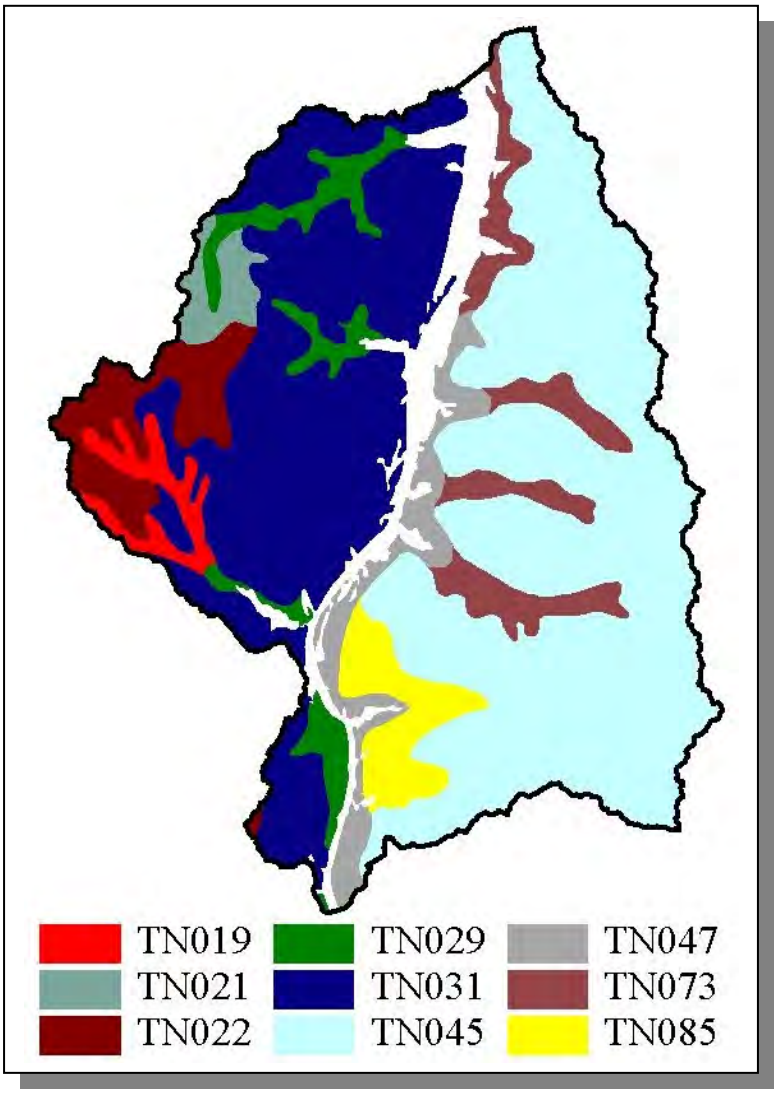


Figure 4-93. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000109.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN019	62.00	C	1.54	4.76	Loam	0.26
TN021	5.00	C	1.30	5.00	Silty Loam	0.43
TN022	5.00	C	1.98	5.07	Loam	0.37
TN029	8.00	C	2.96	5.40	Loam	0.33
TN031	0.00	C	3.27	4.88	Loam	0.33
TN045	0.00	B	1.95	5.45	Loam	0.35
TN047	21.00	C	1.62	5.73	Silty Loam	0.37
TN073	0.00	B	2.97	5.21	Loam	0.34
TN085	0.00	C	1.60	4.89	Clayey Loam	0.30

Table 4-54. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000109. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Benton	14,524	16,243	16,537	11.00	1,597	1,786	1,819	13.9
Decatur	10,472	10,799	11,731	21.40	2,248	2,319	2,519	12.1
Humphreys	15,795	16,839	17,929	5.76	910	970	1,032	13.4
Perry	6,612	7,438	7,631	29.69	1,963	2,208	2,265	15.4
Totals	**47,403**	**51,319**	**53,828**		**6,718**	**7,283**	**7,635**	**13.6**

Table 4-55. Population Estimates in Subwatershed 0604000109.

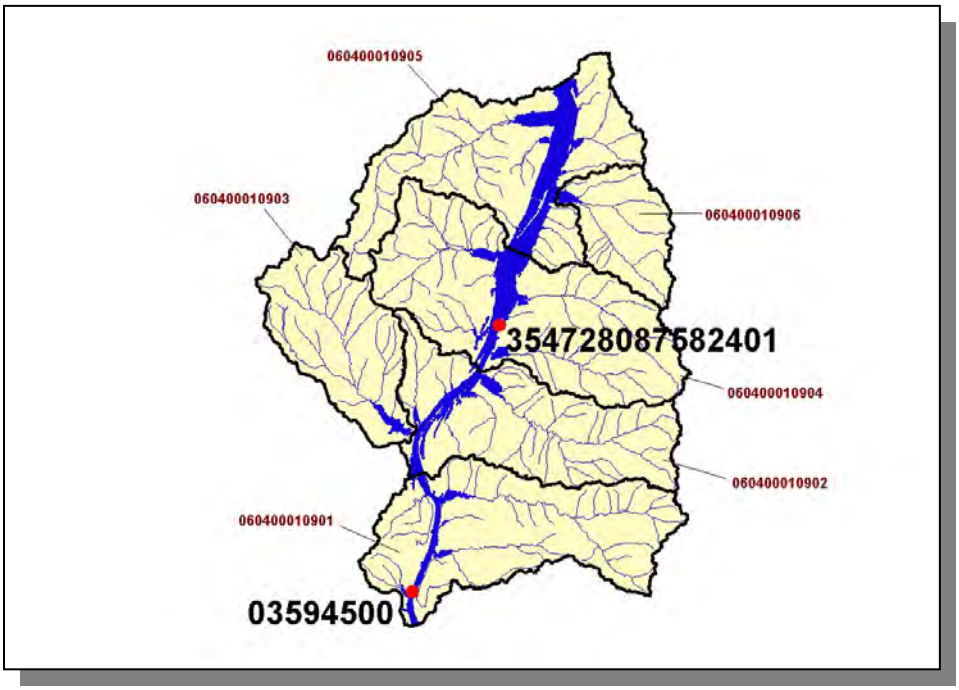


Figure 4-94. Location of Historical Streamflow Data Collection Sites in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905 and 060400010906 boundaries are shown for reference. More information is provided in Appendix IV.*

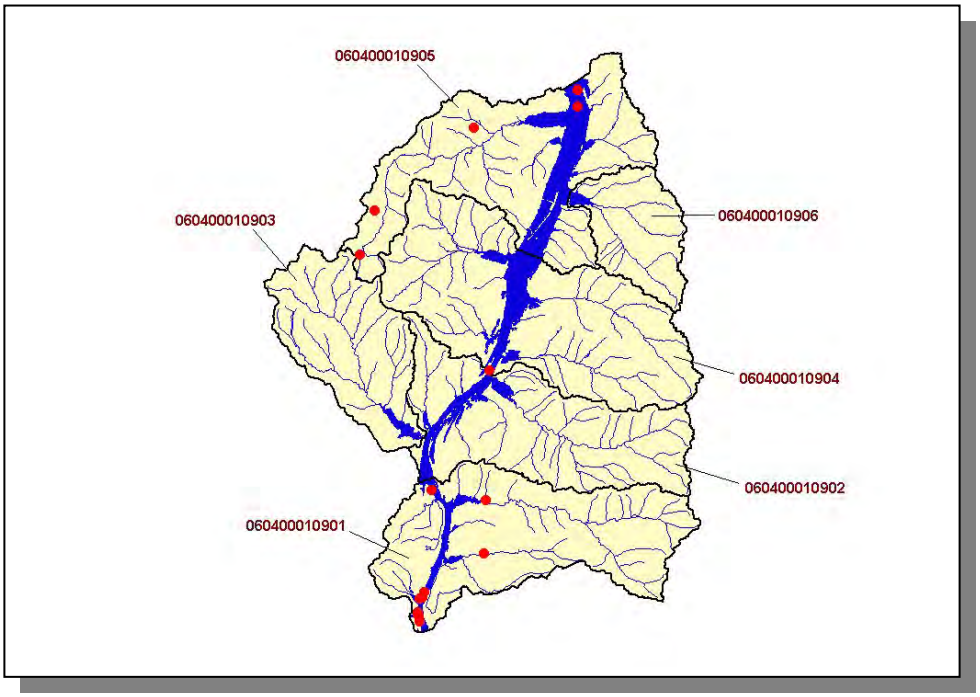


Figure 4-95. Location of STORET Monitoring Sites in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905 and 060400010906 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.I.ii. Point Source Contributions.

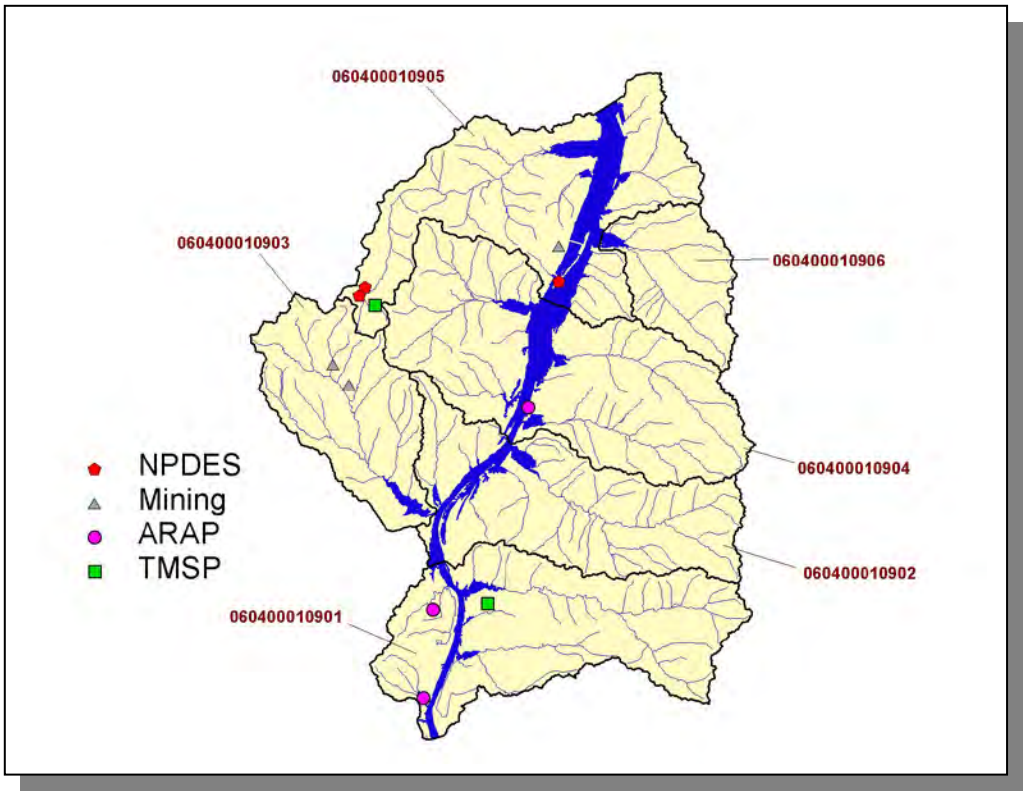


Figure 4-96. Location of Active Point Source Facilities in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

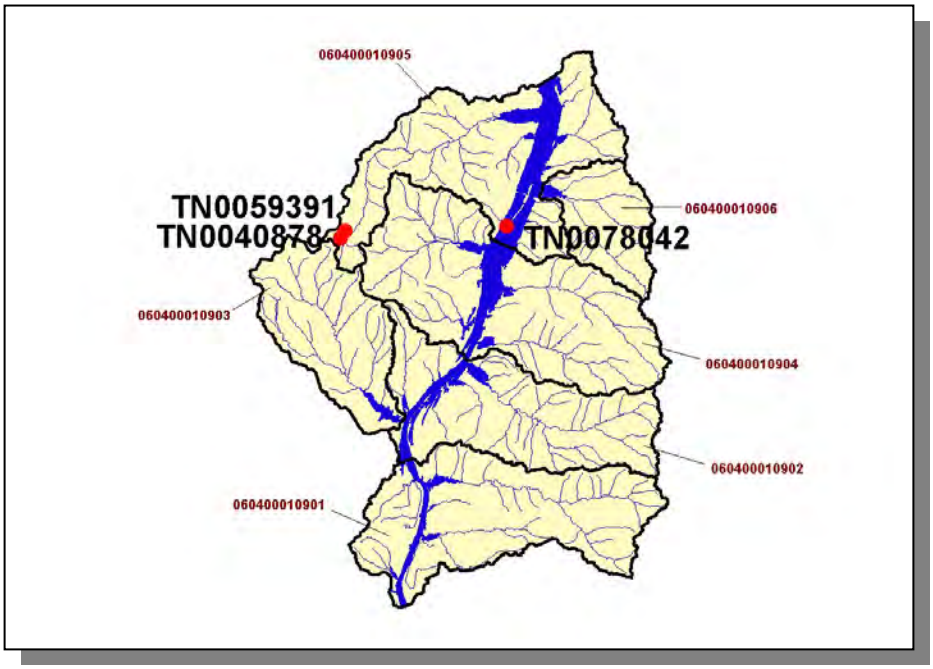


Figure 4-97. Location of NPDES Facilities in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

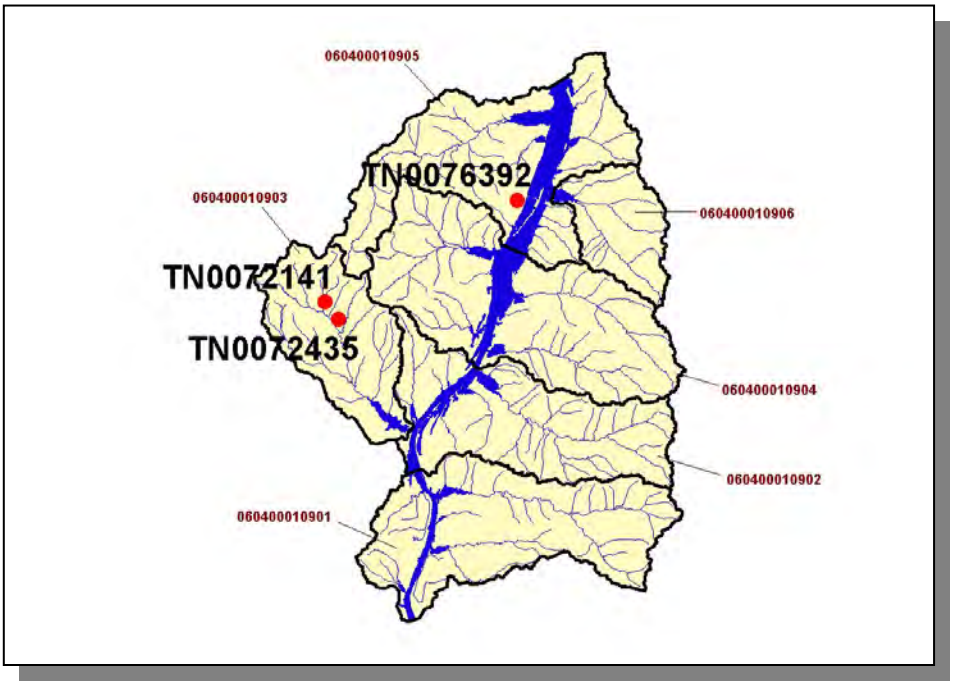


Figure 4-98. Location of Active Mining Facilities in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

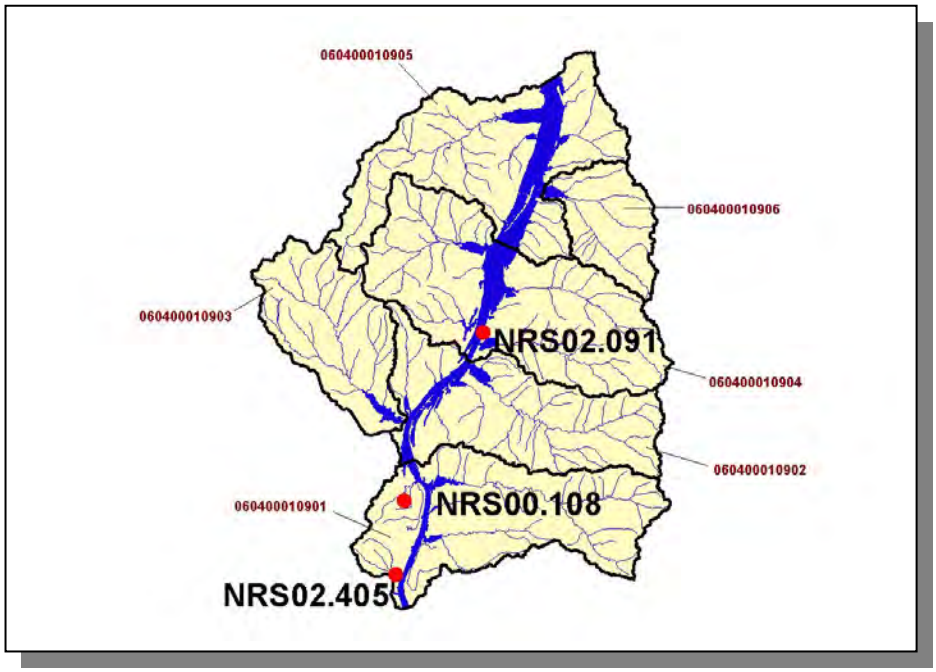


Figure 4-99. Location of ARAP Sites (Individual Permits) in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

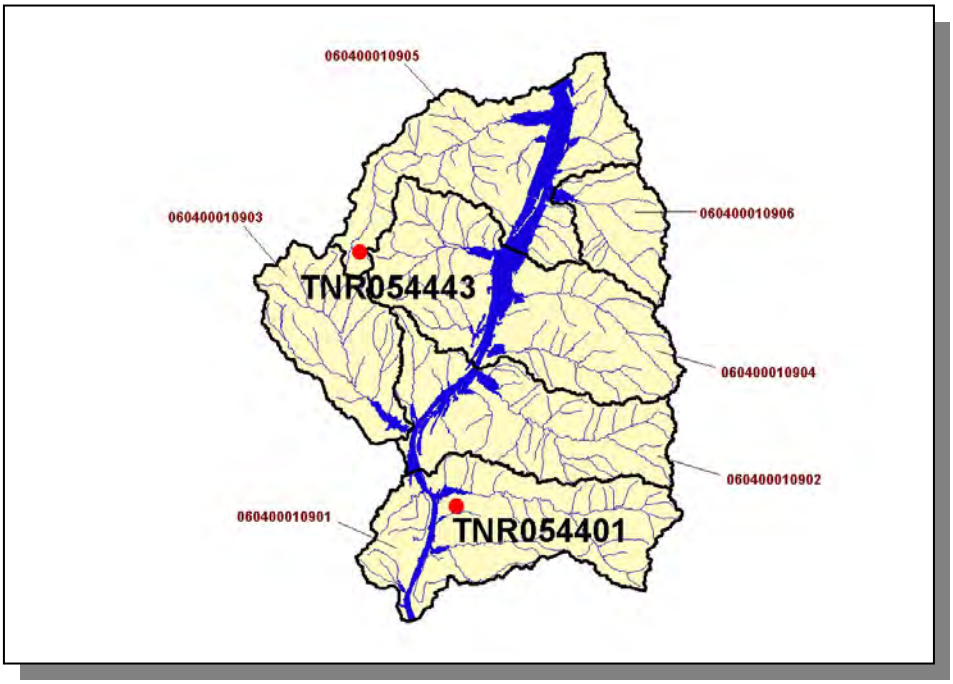


Figure 4-100. Location of TMSP Facilities in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.I.ii.a. Dischargers to Water Bodies Listed on the 2002 303(d) List

There are two NPDES facilities discharging to water bodies listed on the 2002 303(d) list in Subwatershed 0604000109:

- TN0059391 (North Forty Truck Stop) discharges to Eagle Creek @ RM 12.1
- TN0040878 (Pecan Shoppe of Camden) discharges to Eagle Creek @ RM 13.3

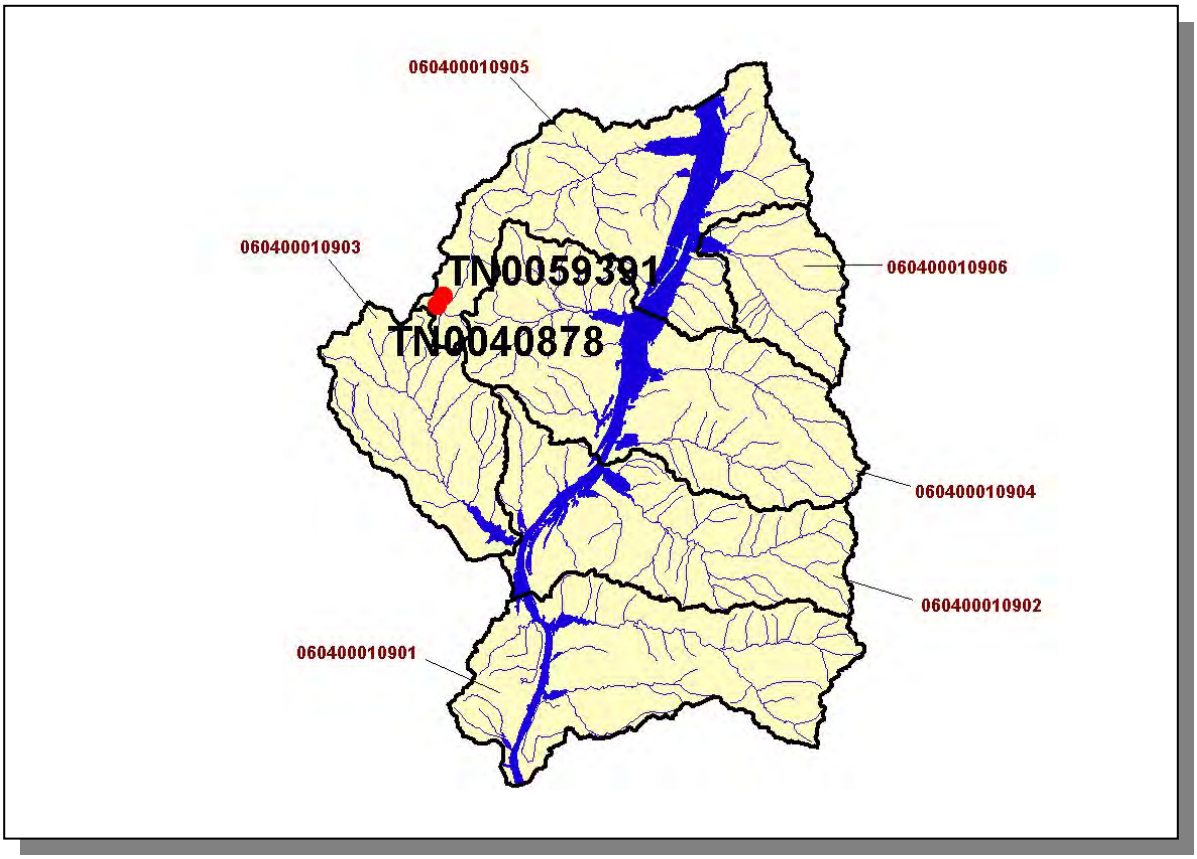


Figure 4-101. Location of NPDES Dischargers to Water Bodies Listed on the 2002 303(d) List in Subwatershed 0604000109. *Subwatershed 060400010901, 060400010902, 060400010903, 060400010904, 060400010905, and 060400010906 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0059391		0		0	0.007
TN0040878			0	0	0.003

Table 4-56. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000109. *Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.*

PERMIT #	$CBOD_5$	FECAL COLIFORM	*E. COLI*	NH_3	TRC	TSS	SETTLEABLE SOLIDS	DO	pH
TN0059391	X	X	X	X	X	X	X	X	X
TN0040878	X	X	X	X	X	X	X	X	X

Table 4-57. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2002 303(d) List in Subwatershed 0604000109. *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.*

4.2.I.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
1,624	3,222	17	6	<5	510	5

Table 4-58. Summary of Livestock Count Estimates in Subwatershed 0604000109. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Benton	172.7	172.7	2.1	6.9
Humphreys	241.2	241.2	3.7	14.4
Perry	223.6	223.6	5.1	22.0
Totals	**637.5**	**637.5**	**10.9**	**43.3**

Table 4-59. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000109.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.41
Grass (Pastureland)	0.79
Grass (Hayland)	0.15
Legumes (Hayland)	0.81
Legumes, Grass (Hayland)	0.14
Grass, Forbs, Legumes (Mixed Pasture)	0.43
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	5.50
Sorghum (Row Crops)	3.59
Soybeans (Row Crops)	8.97
Wheat (Close-Grown Cropland)	2.98
Other Cropland not Planted	3.18
Conservation Reserve Program Lands	0.19
Non-Agricultural Land Use	0.00
Other Land in Farms	0.79
Farmsteads and Ranch Headquarters	0.26

Table 4-60. Annual Estimated Total Soil Loss in Subwatershed 0604000109.

4.2.J. 0604000110 (Cub Creek).

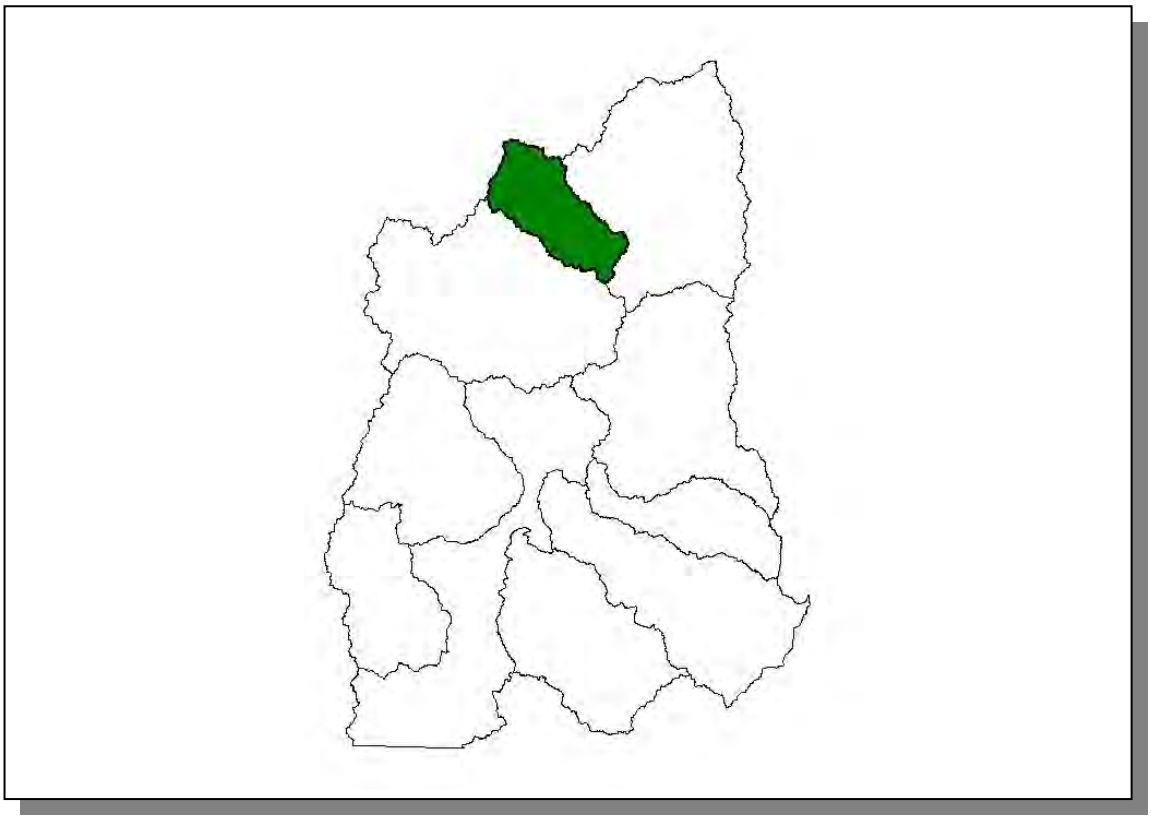


Figure 4-102. Location of Subwatershed 0604000110. *All Tennessee Western Valley (Beech River) HUC-10 subwatershed boundaries in Tennessee are shown for reference.*

4.2.J.i. General Description.

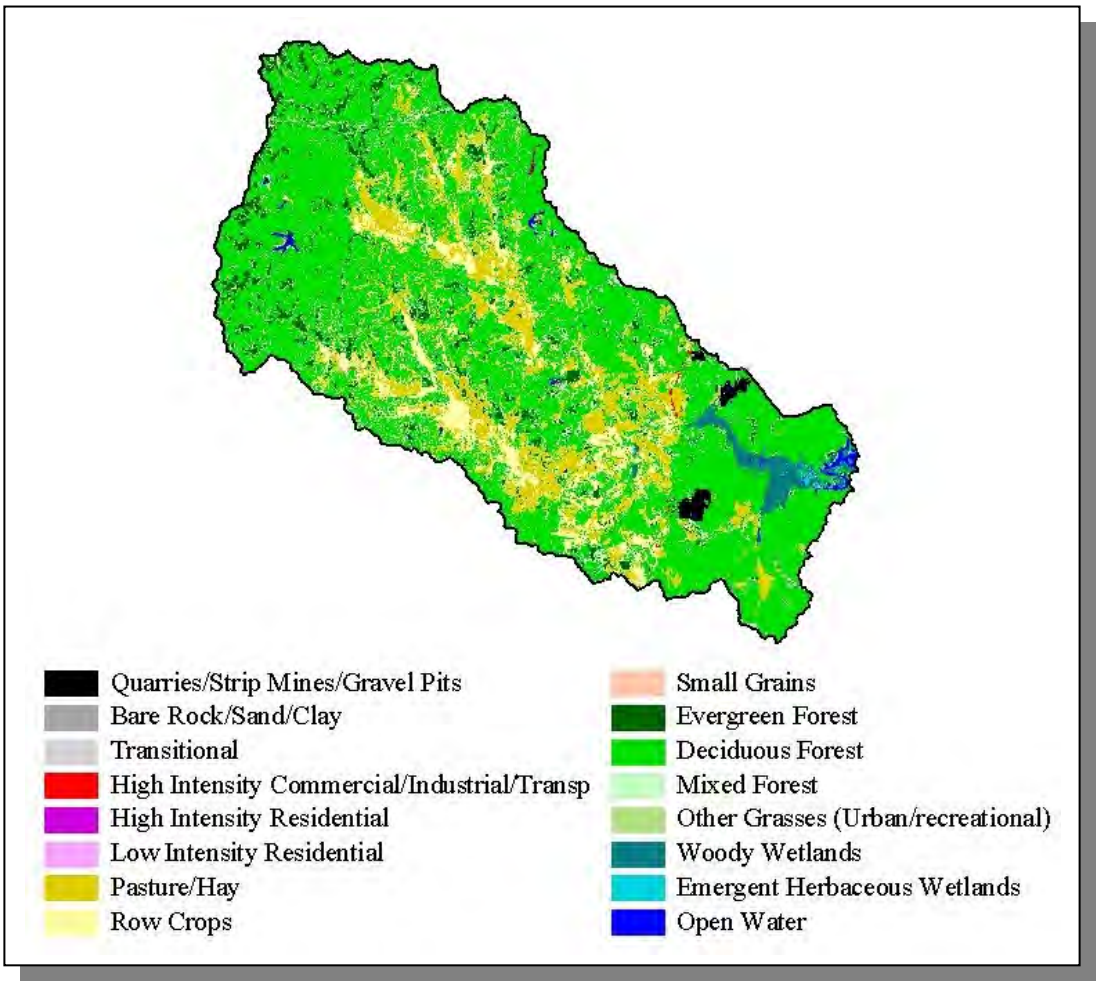


Figure 4-103. Illustration of Land Use Distribution in Subwatershed 0604000110.

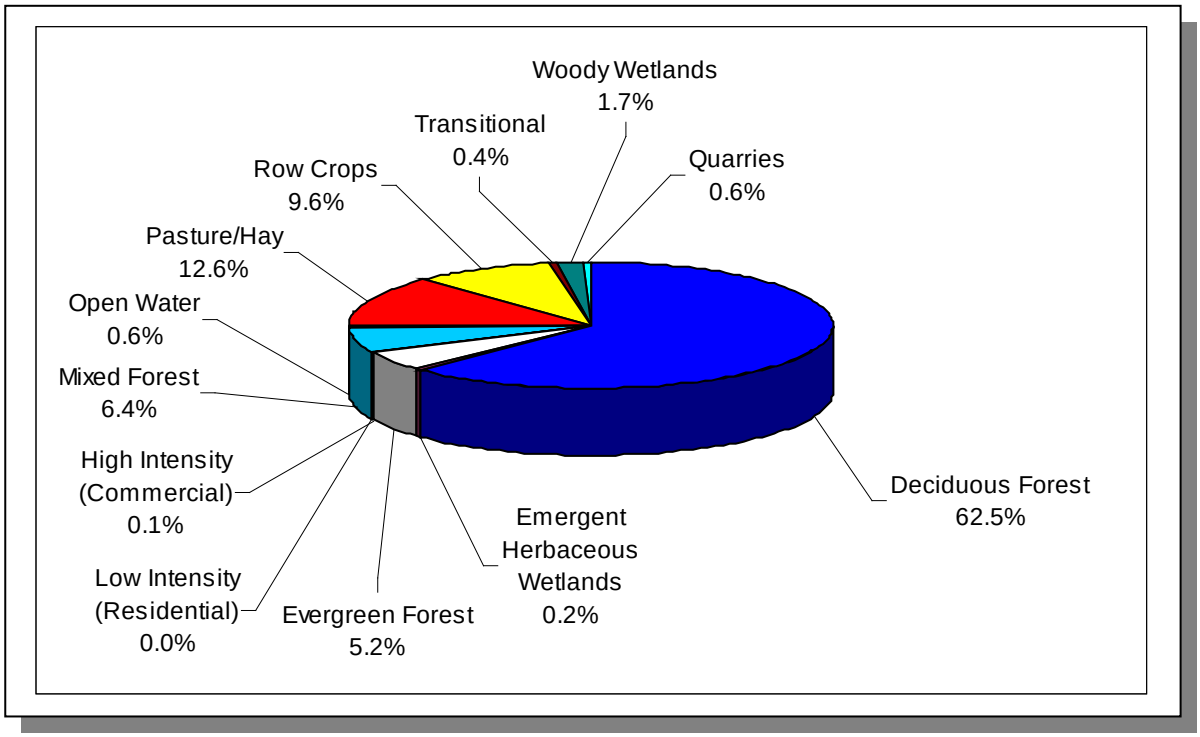


Figure 4-104. Land Use Distribution in Subwatershed 0604000110. *More information is provided in Appendix IV.*

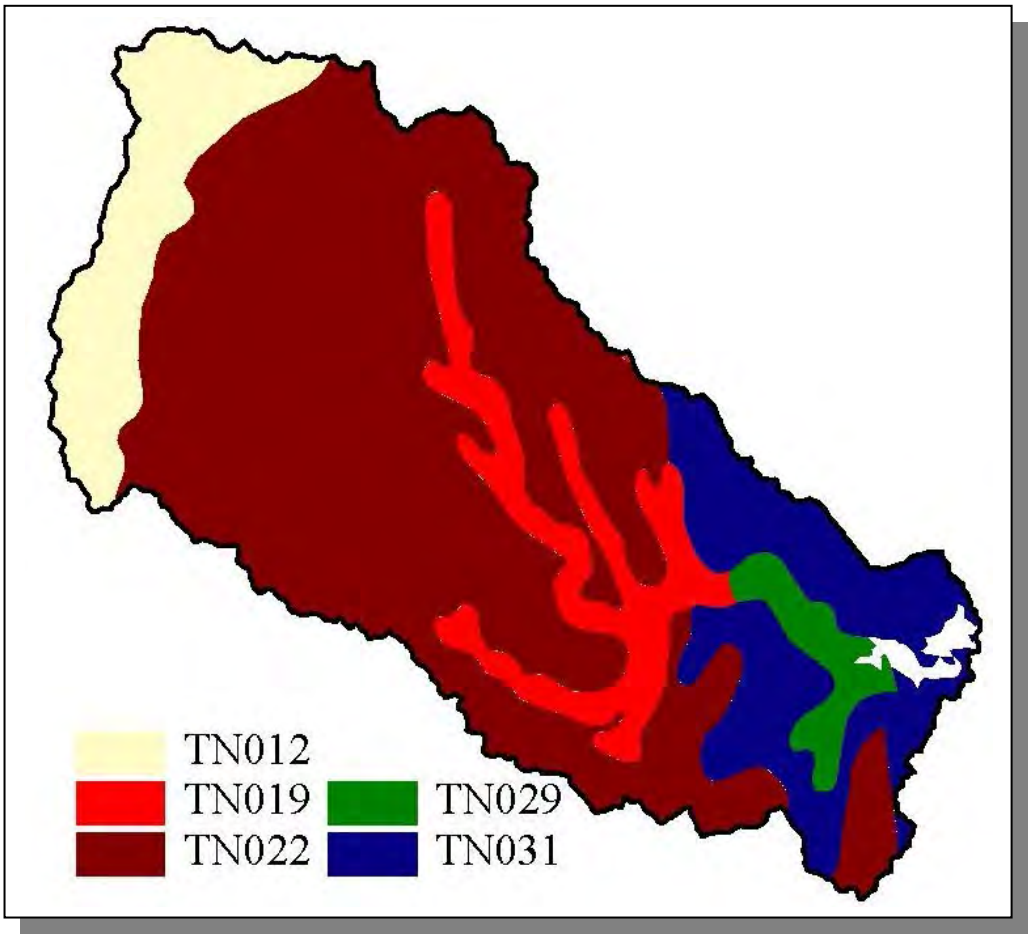


Figure 4-105. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000110.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hr)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN012	1.00	C	2.52	5.13	Silty Loam	0.39
TN019	62.00	C	1.54	4.76	Loam	0.26
TN022	5.00	C	1.98	5.07	Loam	0.37
TN029	8.00	C	2.96	5.40	Loam	0.33
TN031	0.00	C	3.27	4.88	Loam	0.33

Table 4-61. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0604000110. *More information is provided in Appendix IV.*

	COUNTY POPULATION				ESTIMATED POPULATION IN WATERSHED			
County	1990	1997	2000	Portion of Watershed (%)	1990	1997	2000	% Change (1990-1997)
Carroll	27,514	28,990	29,475	0.62	172	181	184	7.0
Decatur	10,472	10,799	11,731	13.78	1,443	1,488	1,617	12.1
Henderson	21,844	24,000	25,522	6.62	1,447	1,590	1,690	16.8
Totals	**59,830**	**63,789**	**66,728**		**3,062**	**3,259**	**3,491**	**14.0**

Table 4-62. Population Estimates in Subwatershed 0604000110.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Parsons	Decatur	2,033	928	698	226	4

Table 4-63. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0604000110

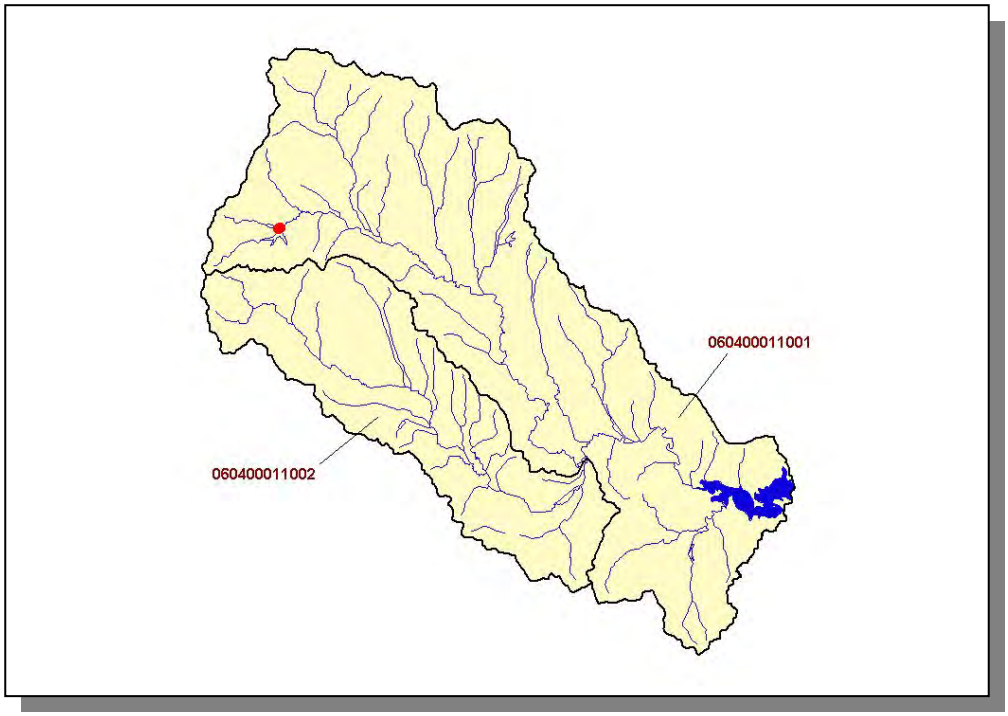


Figure 4-106. Location of STORET Monitoring Sites in Subwatershed 0604000110. *Subwatershed 060400011001 and 060400011002 boundaries are shown for reference. More information, including site names and locations, is provided in Appendix IV.*

4.2.J.ii. Point Source Contributions.

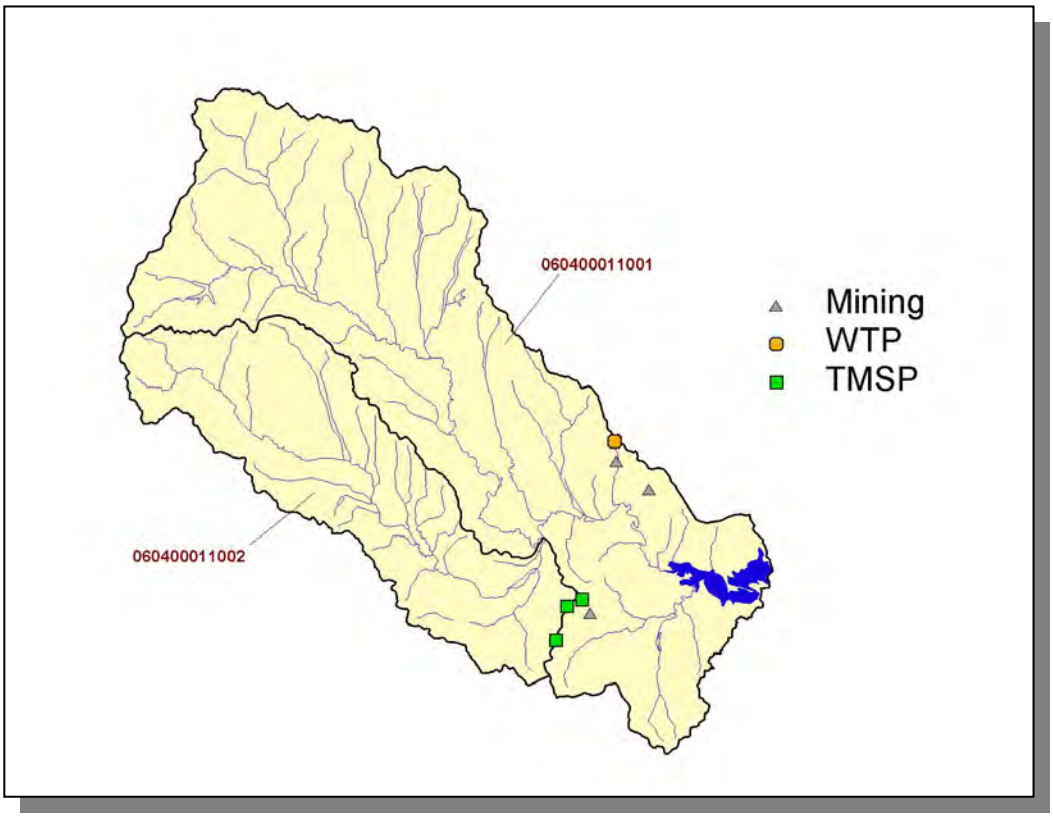


Figure 4-107. Location of Active Point Source Facilities in Subwatershed 0604000110. *Subwatershed 060400011001 and 060400011002 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

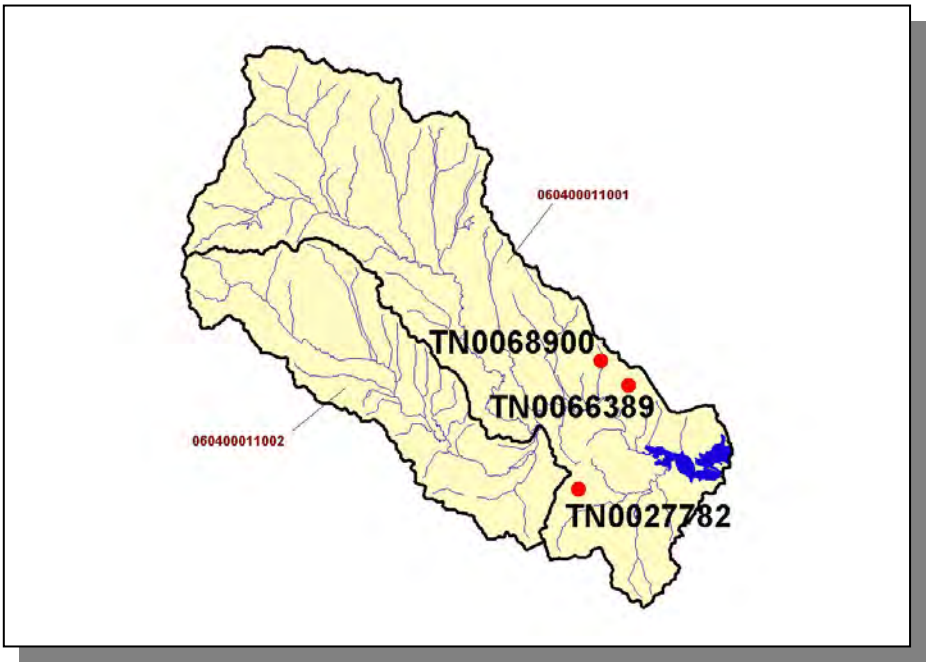


Figure 4-108. Location of Active Mining Facilities in Subwatershed 0604000110. *Subwatershed 060400011001 and 060400011002 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-109. Location of Water Treatment Plants in Subwatershed 0604000110. *Subwatershed 060400011001 and 060400011002 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

Figure 4-110. Location of TMSP Facilities in Subwatershed 0604000110. *Subwatershed 060400011001 and 060400011002 boundaries are shown for reference. More information, including the names of facilities, is provided in Appendix IV.*

4.2.J.iii. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens Sold	Hogs	Sheep
1,642	3,230	<5	<5	<5	953	24

Table 4-64. Summary of Livestock Count Estimates in Subwatershed 0604000110. *According to the 1997 Census of Agriculture (http://www.nass.usda.gov/census/), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.*

	INVENTORY		REMOVAL RATE	
County	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Carroll	169.1	169.1	0.6	2.0
Henderson	158.5	158.5	3.6	12.8
Totals	**327.6**	**327.6**	**4.2**	**14.8**

Table 4-65. Forest Acreage and Average Removal Rates (1987-1994) in Subwatershed 0604000110.

CROPS	TONS/ACRE/YEAR
Legumes (Pastureland)	0.41
Grass (Pastureland)	0.81
Grass (Hayland)	0.08
Legumes (Hayland)	0.42
Legumes, Grass (Hayland)	0.46
Grass, Forbs, Legumes (Mixed Pasture)	1.06
Forest Land (Not Grazed)	0.00
Forest Land (Grazed)	0.00
Corn (Row Crops)	4.62
Cotton (Row Crops)	5.49
Sorghum (Row Crops)	1.71
Soybeans (Row Crops)	6.49
Wheat (Close-Grown Cropland)	4.10
Other Cropland not Planted	5.75
Conservation Reserve Program Lands	0.37
Non-Agricultural Land Use	0.00
Other Land in Farms	0.44
Farmsteads and Ranch Headquarters	0.38

Table 4-66. Annual Estimated Total Soil Loss in Subwatershed 0604000110.

CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED

5.1. BACKGROUND. The Watershed Approach relies on participation at the federal, state, local and nongovernmental levels to be successful. Two types of partnerships are critical to ensure success:

- Partnerships between agencies
- Partnerships between agencies and landowners

This chapter describes both types of partnerships in the Group 3 portion of the Tennessee Western Valley (Beech River) Watershed. The information presented is provided by the agencies and organizations described.

5.2. FEDERAL PARTNERSHIPS.

5.2.A. Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, provides technical assistance, information, and advice to citizens in their efforts to conserve soil, water, plant, animal, and air resources on private lands.

Performance Results System (PRS) is a Web-based database application providing USDA Natural Resources Conservation Service, conservation partners, and the public fast and easy access to accomplishments and progress toward strategies and performance. The PRS may be viewed at http://prms.nrcs.usda.gov/prs. From the opening menu, select "Reports" in the top tool bar. Next, select "2004 Reports" if it's active, and "2003 PRMS Reports" if it's not. Pick the conservation treatment of interest on the page that comes up and reset the date to 2004 Reports if it is not set there. Pick the conservation practice of interest. In the location drop box of the page that comes up, select "Tennessee" and click on the "Refresh" button. In the "By" drop box that comes up, select "Hydrologic Unit" and click on the "Refresh" button. The report of interest can now be viewed.

The data can be used to determine broad distribution trends in service provided to customers by NRCS conservation partnerships. These data do not show sufficient detail to enable evaluation of site-specific conditions (e.g., privately-owned farms and ranches) and are intended to reflect general trends.

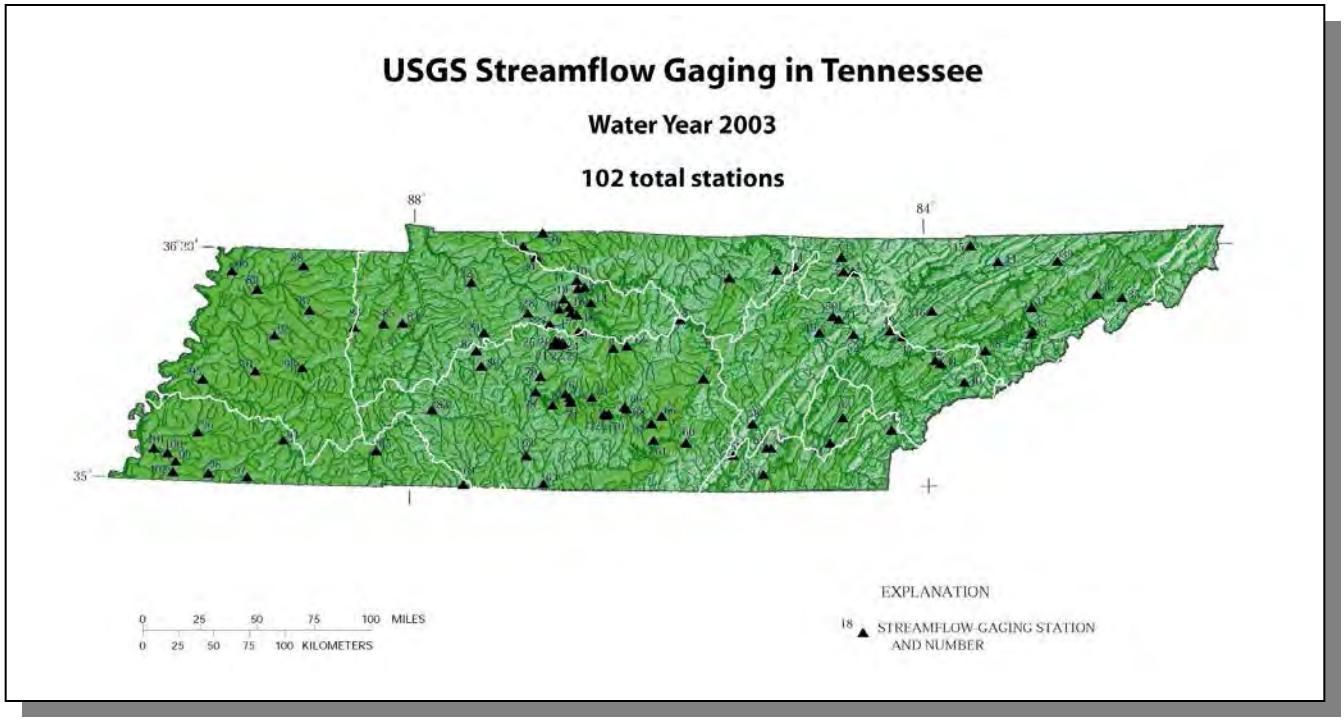
CONSERVATION PRACTICE	TOTAL		
	FEET	ACRES	NUMBER
Comprehensive Nutrient Management Plans		3,841	
Streambank and Shoreline Protection	200		
Water Supply	1,000		1
Water Detention/Retention			1
Pest Management		3,497	
Land Treatment: Buffers	200	157	
Grazing/Forages Practices	20,885	1,631	

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period. More information is provided in Appendix V.*

5.2.B. United States Geological Survey Water Resources Programs – Tennessee District The U.S. Geological Survey (USGS) provides relevant and objective scientific studies and information for public use to evaluate the quantity, quality, and use of the Nation's water resources. In addition to providing National assessments, the USGS also conducts hydrologic studies in cooperation with numerous Federal, State, and local agencies to address issues of National, regional, and local concern. Please visit http://water.usgs.gov/ for an overview of the USGS, Water Resources Discipline.

The USGS collects hydrologic data to document current conditions and provide a basis for understanding hydrologic systems and solving hydrologic problems. In Tennessee, the USGS records streamflow continuously at more than 102 gaging stations equipped with recorders and makes instantaneous measurements of streamflow at many other locations. Ground-water levels are monitored Statewide, and the physical, chemical, and biologic characteristics of surface and ground waters are analyzed. USGS activities also include the annual compilation of water-use records and collection of data for National baseline and water-quality networks. National programs conducted by the USGS include the National Atmospheric Deposition Program (http://bqs.usgs.gov/acidrain/), National Stream Quality Accounting Network (http://water.usgs.gov/nasqan/), and the National Water-Quality Assessment Program (http://water.usgs.gov/nawqa/). For specific information on the Upper and Lower Tennessee NAWQA studies, please visit http://tn.water.usgs.gov/lten/tenn.html

USGS Water Resources Information on the Internet. Real-time and historical streamflow, water levels, and water-quality data at sites operated by the Tennessee District can be accessed at http://waterdata.usgs.gov/tn/nwis/nwis. Data can be retrieved by county, hydrologic unit code, or major river basin using drop-down menus. Contact Donna Flohr at (615) 837-4730 or dfflohr@usgs.gov for specific information about streamflow data. Recent publications by the USGS staff in Tennessee can be accessed by visiting http://tn.water.usgs.gov/pubpg.html. This web page provides searchable bibliographic information to locate reports and other products about specific areas.



5.2.C. U.S. Fish and Wildlife Service. The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Sustaining our nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens. The U.S. Fish and Wildlife Service (Service) works with State and Federal agencies and Tribal governments, helps corporate and private landowners conserve habitat, and cooperates with other nations to halt illegal wildlife trade. The Service also administers a Federal Aid program that distributes funds annually to States for fish and wildlife restoration, boating access, hunter education, and related projects across America. The funds come from Federal excise taxes on fishing, hunting, and boating equipment.

Endangered Species Program

Through the Endangered Species Program, the Service consults with other federal agencies concerning their program activities and their effects on endangered and threatened species. Other Service activities under the Endangered Species Program include the listing of rare species under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.) and the recovery of listed species. Once listed, a species is afforded the full range of protections available under the ESA, including prohibitions on killing, harming or otherwise taking a species. In some instances, species listing can be avoided by the development of Candidate Conservation Agreements, which may remove threats facing the candidate species, and funding efforts such as the Private Stewardship Grant Program. Federally endangered and threatened species in this portion of the Tennessee River watershed include the gray bat (*Myotis grisescens*), bald eagle (*Haliaeetus leucocephalus*), pink mucket (*Lampsilis abrupta*), orange-foot pimpleback (*Plethobasus cooperianus*), clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), cracking pearlymussel (*Hemistena lata*), and rough pigtoe (*Pleurobema plenum*). For a complete listing of endangered and threatened species in Tennessee, please visit the Service's website at http://www.fws.gov/cookeville/.

Recovery is the process by which the decline of an endangered or threatened species is stopped and reversed, and threats to the species' survival are eliminated, so that long-term survival in nature can be ensured. The goal of the recovery process is to restore listed species to a point where they are secure and self-sustaining in the wild and can be removed from the endangered species list. Under the ESA, the Service and National Marine Fisheries Service were delegated the responsibility of carrying out the recovery program for all listed species.

In a partnership with the Tennessee Nature Conservancy (TNC), Tennessee Wildlife Resources Agency (TWRA), and Tennessee Department of Environment and Conservation (TDEC) Division of Natural Heritage, the Service developed a State Conservation Agreement for Cave Dependent Species in Tennessee (SCA). The SCA targets unlisted but rare species and protects these species through a suite of proactive conservation agreements. The goal is to preclude the need to list these species under the ESA. This agreement covers middle and eastern Tennessee and will benefit water quality in many watersheds within the State.

In an effort to preclude the listing of a rare species, the Service engages in proactive conservation efforts for unlisted species. The program covers not only formal candidates, but also other rare species that are under threat. Early intervention preserves management options and minimizes the cost of recovery.

Partners for Fish and Wildlife Program

The U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to restore historic habitat types that benefit native fishes and wildlife. The program adheres to the concept that restoring or enhancing habitats such as wetlands or other unique habitat types will substantially benefit federal trust species on private lands by providing food and cover or other essential needs. Federal trust species include threatened and endangered species, as well as migratory birds (e.g. waterfowl, wading birds, shorebirds, neotropical migratory songbirds).

Participation is voluntary and various types of projects are available. Projects include livestock exclusion fencing, alternate water supply construction, streambank stabilization, restoration of native vegetation, wetland restoration/enhancement, riparian zone reforestation, and restoration of in-stream aquatic habitats.

HOW TO PARTICIPATE

- Interested landowners contact a Partners for Fish and Wildlife Biologist to discuss the proposed project and establish a site visit.
- A visit to the site is then used to determine which activities the landowner desires and how those activities will enhance habitat for trust resources. Technical advice on proposed activities is provided by the Service, as appropriate.
- Proposed cost estimates are discussed by the Service and landowner.
- A detailed proposal which describes the proposed activities is developed by the Service biologist and the landowner. Funds are competitive, therefore the proposal is submitted to the Service's Ecosystem team for ranking and then to the Regional Office for funding.
- After funding is approved, the landowner and the Service co-sign a Wildlife Extension Agreement (minimum 10-year duration).
- Project installation begins.
- When the project is completed, the Service reimburses the landowner after receipts and other documentation are submitted according to the Wildlife Extension Agreement.

For more information regarding the Endangered Species and Partners for Fish and Wildlife programs, please contact the Tennessee Ecological Services Field Office at (931)-528-6481 or visit their website at http://www.fws.gov/cookeville/.

5.2.D. Tennessee Valley Authority (TVA). The Tennessee Valley Authority's (TVA) goals for the 21st Century are to generate prosperity for the Tennessee Valley by promoting economic development, supplying low-cost, reliable power, and supporting a thriving river system. TVA is committed to the sustainable development of the region and is

engaged in a wide range of watershed protection activities. TVA has seven multidisciplinary Watershed Teams to help communities across the Tennessee Valley actively develop and implement protection and restoration activities in their local watersheds. These teams work in partnership with business, industry, government agencies, and community groups to manage, protect, and improve the quality of the Tennessee River and its tributaries. TVA also operates a comprehensive monitoring program to provide real-time information to the Watershed Teams and other entities about the conditions of these resources. The following is a summary of TVA's resource stewardship activities in the Beech River watershed.

Stream Bioassessment

The condition of water resources in the Beech River watershed streams is measured using three independent methods: Index of Biotic Integrity (IBI), number of mayfly, stonefly, and caddis fly taxa (EPT), and Habitat Assessment. Not all of these tools were used at each stream sample site.

IBI. The index of biotic integrity (IBI) assesses the quality of water resources in flowing water by examining a stream's fish assemblage. Fish are useful in determining long-term (several years) effects and broad habitat conditions because they are relatively long-lived and mobile. Twelve metrics address species richness and composition, trophic structure (structure of the food chain), fish abundance, and fish health. Each metric reflects the condition of one aspect of the fish assemblage and is scored against reference streams in the region known to be of very high quality. Potential scores for each of the twelve metrics are 1-poor, 3-intermediate, and 5-the best to be expected. Scores for the 12 metrics are summed to produce the IBI for the site. The following table associates IBI ranges with attributes of fish assemblages.

Attributes	IBI Range
Comparable to the best situations without influence of man; all regionally expected species for the habitat and stream size, including the most intolerant forms, are present with full array of age and sex classes; balanced trophic structure.	58-60
Species richness somewhat below expectation, especially due to loss of most intolerant forms; some species with less than optimal abundance or size distribution; trophic structure shows some signs of stress.	48-52
Signs of additional deterioration include fewer intolerant forms, more skewed trophic structure (e.g., increasing frequency of omnivores); older age classes of top predators may be rare.	40-44
Dominated by omnivores, pollution-tolerant forms, and habitat generalists; few top carnivores; growth rates and condition factors commonly depressed; hybrids and diseased fish often present.	28-34
Few fish present, mostly introduced or tolerant forms; hybrids common; disease, parasites, fin damage, and other anomalies regular.	12-22

EPT. The number and types of aquatic insects, like fish, are indicative of the general quality of the environment in which they live. Unlike fish, aquatic insects are useful in determining short-term and localized impacts because they are short-lived and have limited mobility. The method TVA uses involves only qualitative sampling and field identification in mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddiesflies (Trichoptera) to the family taxonomic level (EPT). The score for each site is simply the number of EPT families. The higher the EPT scores are indicative of high quality streams because these insect larvae are intolerant of poor water quality. Scores in the Beech River watershed ranged from a low 6 to a high 14 in the most pristine stream.

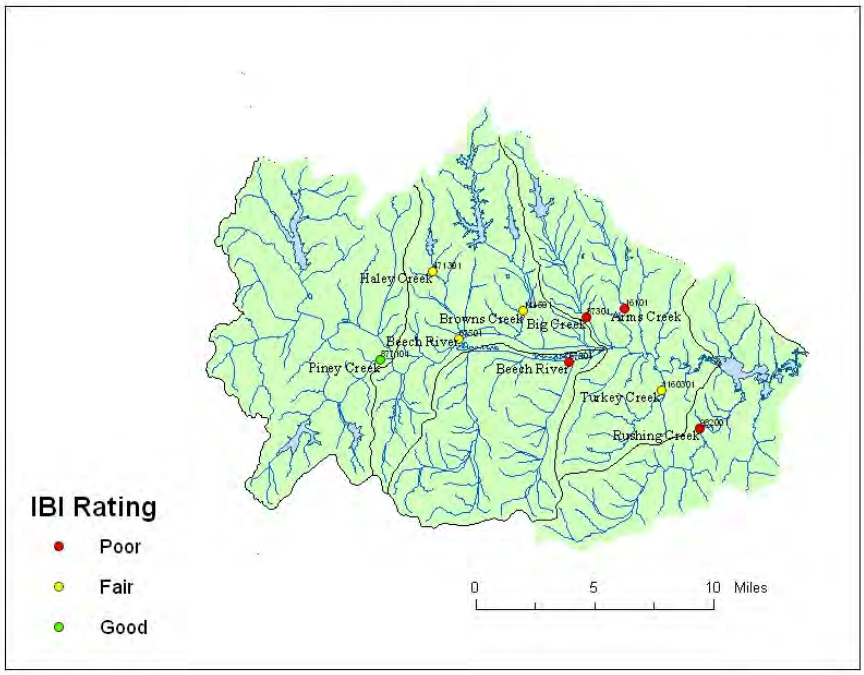
Habitat Assessment. The quality and quantity of habitat (physical structure) directly affect aquatic communities. Habitat assessments were done at most stream sampling sites to help interpret IBI and EPT results. If habitat quality at a site is similar to that found at a good reference site, any impacts identified by IBI and EPT scores can reasonably be attributed to water quality problems. However, if habitat at the sample site differs considerably from that at a reference site, lower than expected IBI and EPT scores might be due to degraded habitat rather than water quality impacts.

The habitat assessment method used by TVA (modified EPA protocol) compares observed instream, channel, and bank characteristics at a sample site to those expected at a similar high-quality stream in the region. Each of the stream attributes listed below is given a score of 1 (poorest condition) to 4 (best condition). The habitat score for the sample site is simply the sum of these attributes. Scores can range from a low of 10 to a high of 40:

1. Instream cover (fish)
2. Epifaunal substrate
3. Embeddedness
4. Channel Alteration
5. Sediment Deposition
6. Frequency of Riffle
7. Channel Flow Status
8. Bank vegetation protection - Left bank and right bank, separately
9. Bank stability - Left bank and right bank, separately
10. Riparian vegetation zone width - Left bank and right bank, separately

Sample Site Selection. EPT sampling and fish community assessment (IBI) are conducted at the same sites. Site selection is governed primarily by study objectives, stream physical features, and stream access. TVA's objective is to characterize the quality of water resources within a sub-watershed (11-digit hydrologic unit). Sites are typically located in the lower end of sub-watersheds and at intervals on the mainstem to integrate the effects of land use. TVA began monitoring the ecological health of the Beech River in the early 1990s. The map below illustrates the nine sampling sites that TVA monitors in the Beech River watershed. These sites are typically sampled every five years to keep a current picture of watershed condition.

Beech River IBI Sites, 2004



Contacts. Details about stream bioassessment sampling sites and scores in the Beech River watershed can be obtained by contacting Amy Wales at (423)-876-6748 or akwales@tva.gov or http://www.tva.gov.

Coalition Support

Citizen-based Organizations. Citizen-based watershed organizations can be the key ingredient in making watershed protection efforts a success. What TVA can (and does) do to improve water quality is collect and share data, identify problems, and work with the Tennessee Valley's citizens to achieve solutions. Through its Clean Water Initiative, which began in 1992, TVA builds partnerships with community residents, businesses, and government agencies to promote watershed protection. TVA's Watershed Teams are responsible for carrying out the program. They focus on improving water and shoreline conditions so that people and aquatic life can benefit from having clean water.

Actions that have been accomplished through these community coalition efforts are:

- Instituted agricultural and urban-management practices that reduce water pollution.
- Treated eroded land and stabilized stream banks.
- Planted vegetation and installed structures intended to improve aquatic habitat.

- Collected waste and litter from stream banks and shores.

The TVA Kentucky Watershed Team (KWT) has been successful in working with several community-based organizations. The Tennessee River Water Quality Team (TRWQT) is a coalition that was formed by the KWT to assist with improvement of water quality issues in the Beech River Watershed. This group is one of the KWT's key partners in the Beech River and has been instrumental in the success of shoreline stabilization projects, improving riparian zones, stabilizing road banks that contribute to storm water run-off, and holding environmental educational workshops.

Interagency Partnerships. The Beech River Watershed Development Authority (BRWDA) is a state agency that works closely with the KWT in managing a series of lakes, in Henderson Co., TN, that were created by the TVA for economic develop in the 1960's. BRWDA has developed several rural lakefront subdivisions using typical high impact design and construction techniques. Their latest planned development is the first to occur on Red Bud Lake. TVA is currently working with BRWDA to develop plans that emphasize and demonstrate "sustainable development" (i.e., development that meets the needs of citizens today and the future without compromising the viability of the local environment.) Forested shoreline buffers, abundant greenspace, and reciprocating wetland technology for waste treatment are some of the elements being considered for the next residential development project. TVA will provide technical assistance in all aspects of this model including design, lay-out and construction, site development, and development of an alternative waste water treatment system.

Outreach

Watershed Education. In 2003-04 the Tennessee Wildlife Resource Agency (TWRA) began the implementation of the Educational Cooperative Habitat Opportunities program (Project ECHO) on Kentucky Reservoir as a pilot program to develop and establish management strategies and methodologies for riparian zone habitat restoration. This project involves TWRA, in cooperation with the KWT, other State and Federal agencies, private businesses, and regional sportsman's, and civic groups. Agency experts provide technical guidance, supervision, and assistance to regional school groups who will re-establish native vegetation in the riparian zone and shallow water areas of Kentucky Reservoir in the specific areas they adopt. The school groups utilize the adopted areas as outdoor laboratories for evaluations of plant survival and growth, as well as evaluations of the effectiveness of the habitat restoration to enhance fish and wildlife populations in these areas. This program also allows the students to apply what they are learning in the classrooms to real-life situations.

All riparian zone restoration projects are evaluated on an annual basis by the school groups. They evaluate such things as seeding rates, fertilizer and lime application rates, spacing of plants, survival and growth of plants and the overall effectiveness of the habitat restoration efforts. All work and evaluations conducted during the calendar year are summarized by each involved group and a report is submitted to TWRA by June 1 each year. These reports are combined by TWRA and made available to cooperators and the general public in a year-end report.

During the first year of Project ECHO, land owned by TVA was utilized to establish applicable riparian zone restoration methodologies. Some of the selected priority sites include: Bear Creek Tract, Beech River Agricultural Tract, and Eagle Creek Embayment in Henry Co.

Protection and Restoration Activities

Promote Best Management Practices. In 2003, the KWT partnered with several soil conservation districts (SCD) to implement agricultural best management practices (BMPs) throughout the west Tennessee River watershed. The Henderson County SCD, with assistance of the KWT, hosted an Agricultural BMP Demonstration Day. During the course of this event, employees with the Henderson Co SCD demonstrated the installation of heavy use pads, which aid in controlling sediment run-off, discussed the benefits of alternative livestock watering systems and stream protection pertaining to managing livestock access to streams using vegetative barriers, fencing or both. In upcoming years, KWT plans to continue the support of these events by expanding efforts to raise awareness of water resource issues and promote the use of agricultural best management practices throughout the Beech River watershed.

Promote Riparian Buffers. Native vegetation that occurs along waterfronts provides an attractive landscape with many important benefits and helps preserve plants and animals that make our area unique. The KWT encourages waterfront property owners to maintain and establish vegetated riparian buffers by providing information and materials to the riparian property owners. In 2003-04, the KWT partnered with the TRWQT, BRWDA, and Jen-Hill Construction to improve shoreline conditions on a common lot, which is shared by all the homeowners on Beech Lake, in Lexington, TN. Homeowners around Beech Lake were encouraged to visit this demonstration project site during the implementation to get a better understanding about why shoreline stabilization and riparian buffers are important to the future success of our waters. After the project was completed, the KWT in cooperation with the TRWQT and the BRWDA hosted an environmental educational workshop that emphasized the importance of BMPs during and after construction activities.

Additional information about riparian buffers can be obtained by visiting http://www.tva.com/river/landandshore/stabilization/benefits.htm

Further information on TVA's watershed assistance activities in the Tennessee Western Valley (Beech River) Watershed can be obtained by writing the KWT at 202 West Blythe St., Paris, TN 38242 or by calling (731)-641-2000.

5.3. STATE PARTNERSHIPS.

5.3.A. TDEC Division of Water Supply. The Source Water Protection Program, authorized by the 1996 Amendments to the Safe Drinking Water Act, outline a comprehensive plan to achieve maximum public health protection. According to the plan, it is essential that every community take these six steps:

1) Delineate the drinking water source protection area
2) Inventory known and potential sources of contamination within these areas
3) Determine the susceptibility of the water supply system to these contaminants
4) Notify and involve the public about threats identified in the contaminant source inventory and what they mean to their public water system
5) Implement management measures to prevent, reduce or eliminate threats
6) Develop contingency planning strategies to deal with water supply contamination or service interruption emergencies (including natural disaster or terrorist activities).

Source water protection has a simple objective: to prevent the pollution of the lakes, rivers, streams, and ground water (wells and springs) that serve as sources of drinking water before they become contaminated. This objective requires locating and addressing potential sources of contamination to these water supplies. There is a growing recognition that effective drinking water system management includes addressing the quality and protection of the water sources.

Source Water Protection has a significant link with the Watershed Management Program goals, objectives and management strategies. Watershed Management looks at the health of the watershed as a whole in areas of discharge permitting, monitoring and protection. That same protection is important to protecting drinking water as well. Communication and coordination with a multitude of agencies is the most critical factor in the success of both Watershed Management and Source Water Protection.

Watershed management plays a role in the protection of both ground water and surface water systems. Watershed Management is particularly important in areas with karst (limestone characterized by solution features such as caves and sinkholes as well as disappearing streams and spring), since the differentiation between ground water and surface water is sometimes nearly impossible. What is surface water can become ground water in the distance of a few feet and vice versa.

Source water protection is not a new concept, but an expansion of existing wellhead protection measures for public water systems relying on ground water to now include surface water. This approach became a national priority, backed by federal funding, when the Safe Drinking Water Act amendments (SDWA) of 1996 were enacted. Under this Act, every public drinking water system in the country is scheduled to receive an assessment of both the sources of potential contamination to its water source of the threat these sources may pose by the year 2003 (extensions were available until 2004). The assessments are intended to enhance the protection of drinking water supplies within existing programs at the federal, state and local levels. Source water

assessments were mandated and funded by Congress. Source water protection will be left up to the individual states and local governments without additional authority from Congress for that progression.

As a part of the Source Water Assessment Program, public water systems are evaluated for their susceptibility to contamination. These individual source water assessments with susceptibility analyses are available to the public at http://www.state.tn.us/environment/dws as well as other information regarding the Source Water Assessment Program and public water systems.

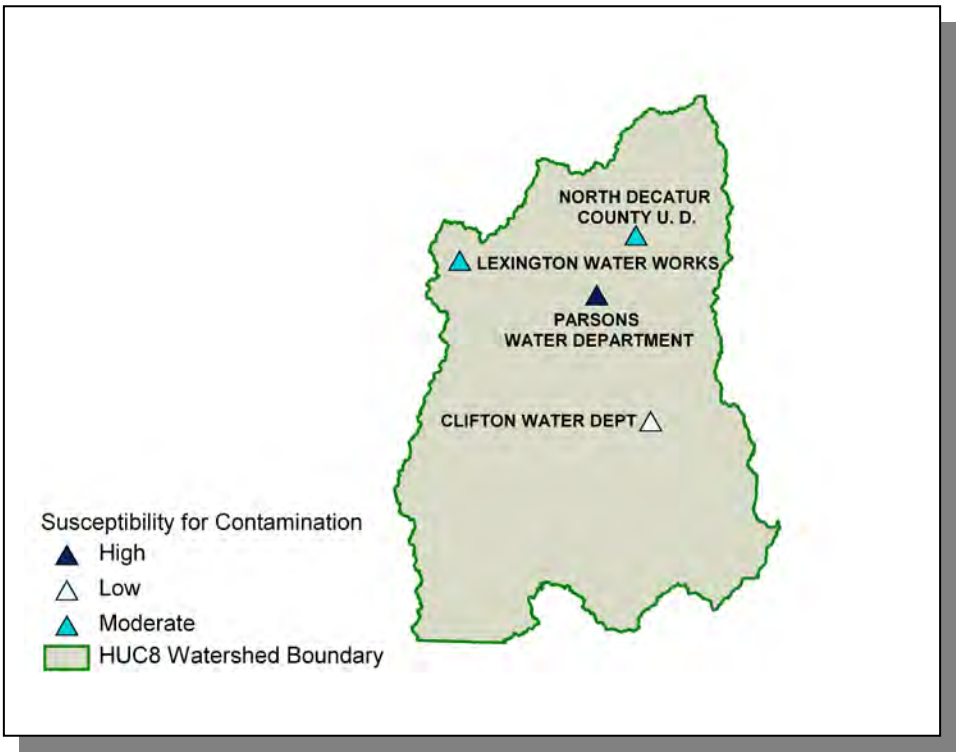


Figure 5-1. Susceptibility for Contamination in the Tennessee River Western Valley (Beech River) Watershed.

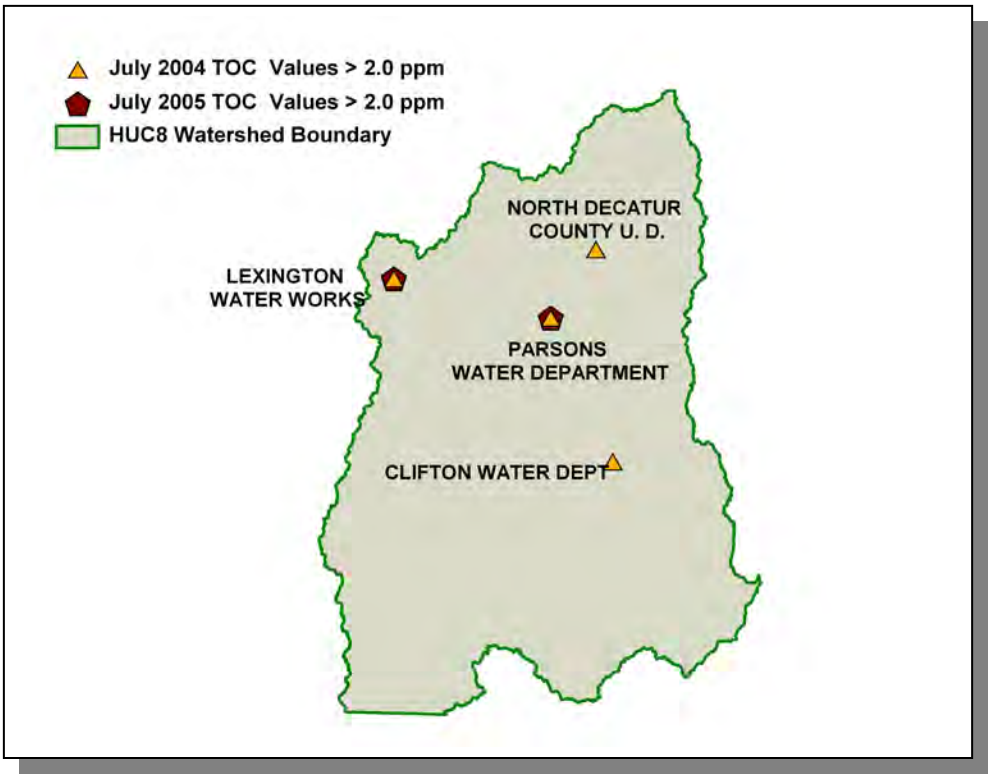


Figure 5-2. July 2004 and 2005 Raw Water Total Organic Carbon (TOC) Analysis in the Tennessee River Western Valley (Beech River) Watershed.

For further discussion on ground water issues in Tennessee, the reader is referred to the Ground Water Section of the 305(b) Water Quality Report at http://www.tdec.net/water.shtml.

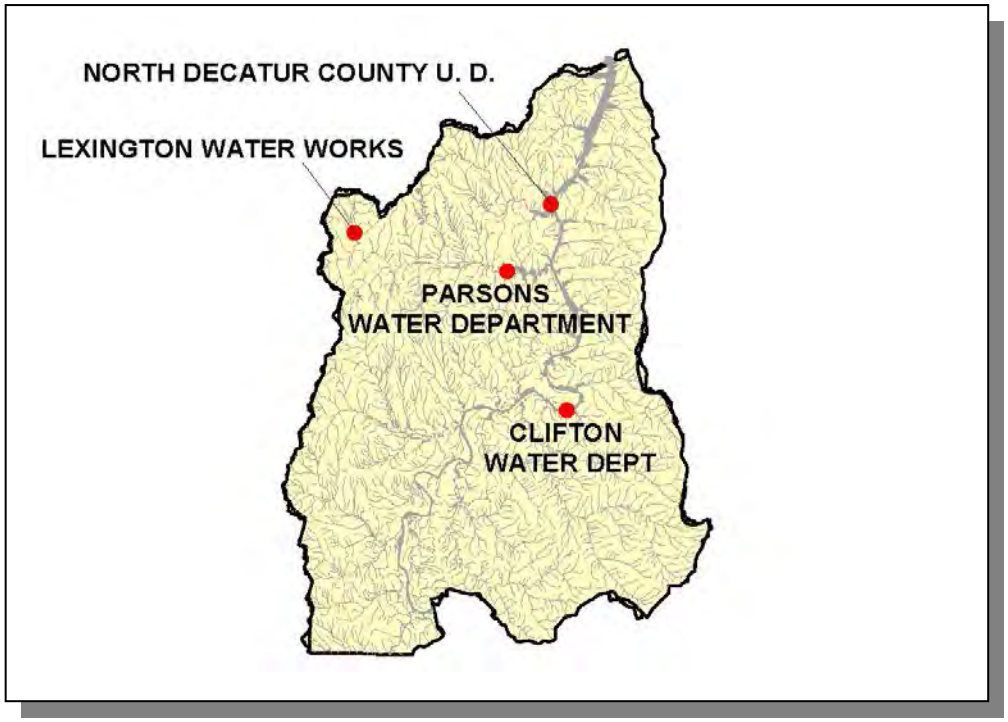


Figure 5-3. Locations of Community and Non-Community Public Water Supply Intakes in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

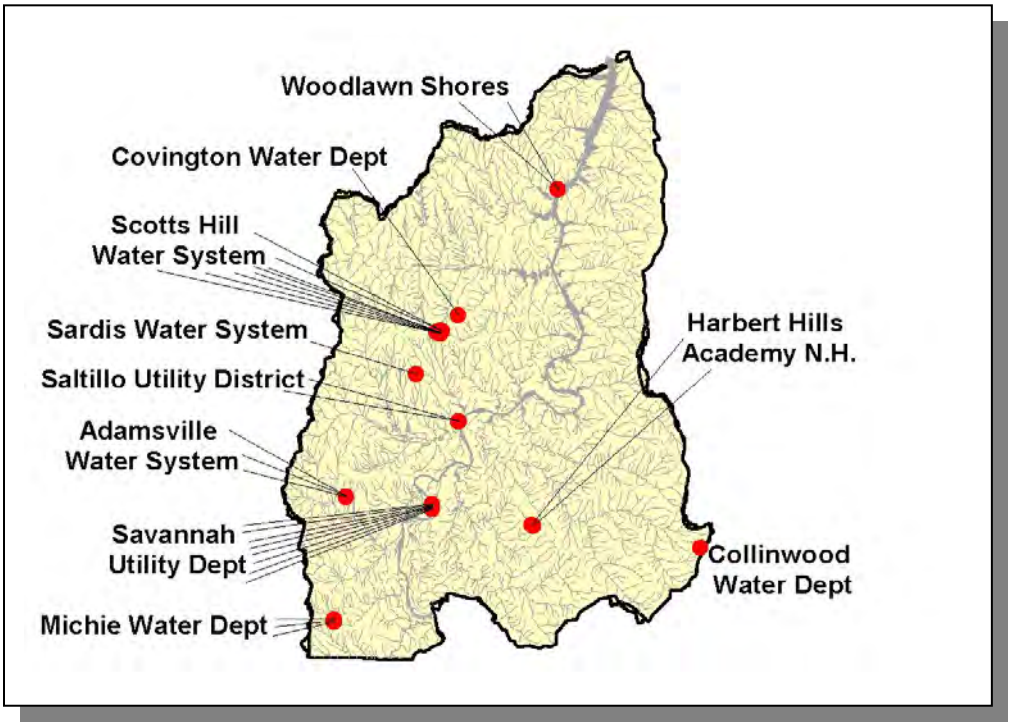


Figure 5-4. Locations of Community and Public Groundwater Supply Intakes in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

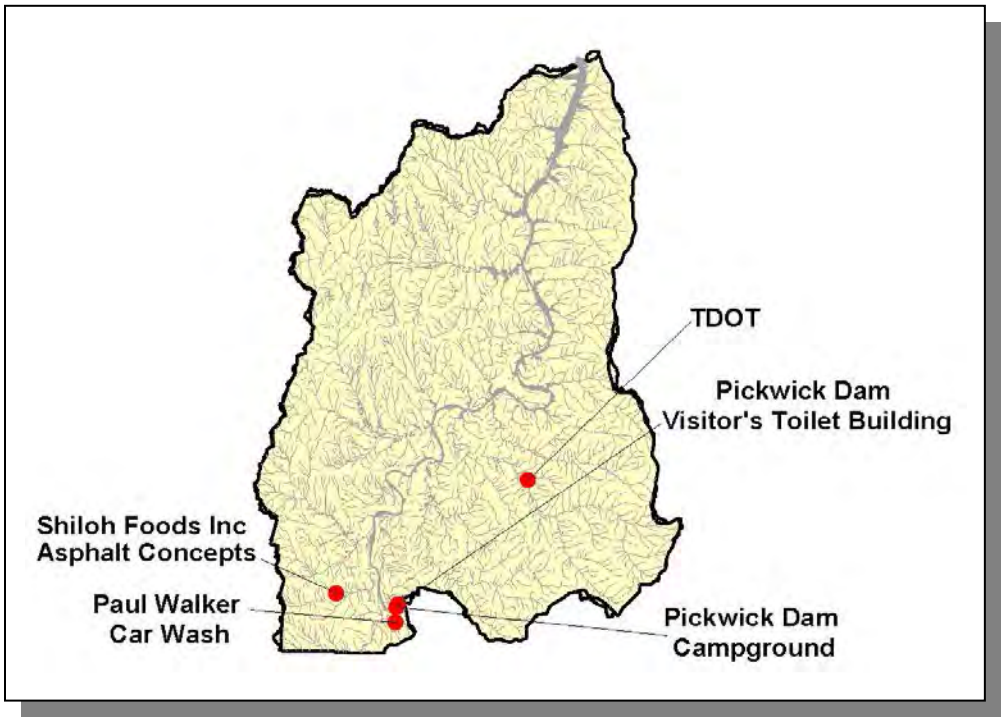


Figure 5-5. Locations of UIC (Underground Injection Control) Sites in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Injection wells include stormwater sinkholes modified for drainage, commercial/industrial septic tanks, and large capacity septic tanks.*

5.3.B. State Revolving Fund. TDEC administers the state's Clean Water State Revolving Fund Program. Amendment of the Federal Clean Water Act in 1987 created the Clean Water State Revolving Fund (SRF) Program to provide low-interest loans to cities, counties, and utility districts for the planning, design, and construction of wastewater facilities. The U.S. Environmental Protection Agency awards annual capitalization grants to fund the program and the State of Tennessee provides a twenty-percent funding match. TDEC has awarded loans totaling approximately $550 million since the creation of the SRF Program. SRF loan repayments are returned to the program and used to fund future SRF loans.

SRF loans are available for planning, design, and construction of wastewater facilities, or any combination thereof. Eligible projects include new construction or upgrading/expansion of existing facilities, including wastewater treatment plants, pump stations, force mains, collector sewers, interceptors, elimination of combined sewer overflows, and nonpoint source pollution remedies.

SRF loan applicants must pledge security for loan repayment, agree to adjust user rates as needed to cover debt service and fund depreciation, and maintain financial records that follow governmental accounting standards. SRF loan interest rates range from zero percent to market rate, depending on the community's per-capita income, taxable sales, and taxable property values. Most SRF loan recipients qualify for interest rates between 2 and 4 percent. Interest rates are fixed for the life of the term of the loan. The maximum loan term is 20 years or the design life of the proposed wastewater facility, whichever is shorter.

TDEC maintains a Priority Ranking System and Priority List for funding the planning, design, and construction of wastewater facilities. The Priority Ranking List forms the basis for funding eligibility determinations and allocation of Clean Water SRF loans. Each project's priority rank is generated from specific priority ranking criteria and the proposed project is then placed on the Project Priority List. Only projects identified on the Project Priority List may be eligible for SRF loans. The process of being placed on the Project Priority List must be initiated by a written request from the potential SRF loan recipient or their engineering consultant. SRF loans are awarded to the highest priority projects that have met SRF technical, financial, and administrative requirements and are ready to proceed.

Since SRF loans include federal funds, each project requires development of a Facilities Plan, an environmental review, opportunities for minority and women business participation, a State-approved sewer use ordinance and Plan of Operation, and interim construction inspections.

For further information about Tennessee's Clean Water SRF Loan Program, call (615) 532-0445 or visit their Web site at http://www.tdec.net/srf.

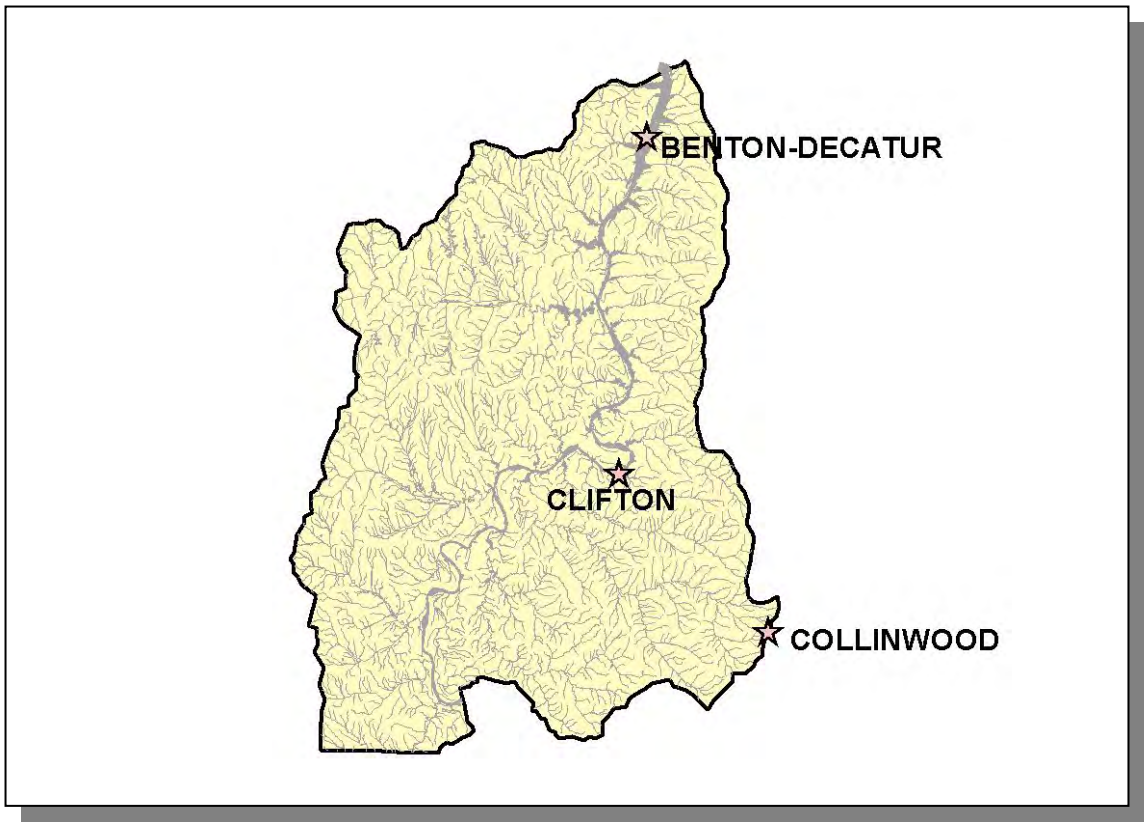


Figure 5-6. Location of Communities Receiving SRF Loans or Grants in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *More information is provided in Appendix V.*

5.3.C. Tennessee Department of Agriculture. The Tennessee Department of Agriculture's Water Resources Section consists of the federal Section 319 Nonpoint Source Program and the Agricultural Resources Conservation Fund Program. Both of these are grant programs which award funds to various agencies, non-profit organizations, and universities that undertake projects to improve the quality of Tennessee's waters and/or educate citizens about the many problems and solutions to water pollution. Both programs fund projects associated with what is commonly known as "nonpoint source pollution."

The Tennessee Department of Agriculture's Nonpoint Source Program (TDA-NPS) has the responsibility for management of the federal Nonpoint Source Program, funded by the US Environmental Protection Agency through the authority of Section 319 of the Clean Water Act. This program was created in 1987 as part of the reauthorization of the Clean Water Act, and it established funding for states, territories and Indian tribes to address NPS pollution. Nonpoint source funding is used for installing Best Management Practices (BMPs) to stop known sources of NPS pollution, training, education, demonstrations and water quality monitoring. The TDA-NPS Program is a non-regulatory program, promoting voluntary, incentive-based solutions to NPS problems. The TDA-NPS Program basically funds three types of programs:

- BMP Implementation Projects. These projects aid in the improvement of an impaired waterbody, or prevent a non-impaired water from becoming listed on the 303(d) List.

- Monitoring Projects. Up to 20% of the available grant funds are used to assist the 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. Some monitoring in the Tennessee Western Valley (Beech River) Watershed was funded under an agreement with the Tennessee Department of Agriculture, Nonpoint Source Program (U.S. Environmental Protection Agency Assistance Agreements C9994674-00-0, C9994674-01-0, and C9994674-02-0).

- Educational Projects. The intent of educational projects funded through TDA-NPS is to raise the awareness of landowners and other citizens about practical actions that can be taken to eliminate nonpoint sources of pollution to the waters of Tennessee.

The Tennessee Department of Agriculture Agricultural Resources Conservation Fund Program (TDA-ARCF) provides cost-share assistance to landowners across Tennessee to install BMPs that eliminate agricultural nonpoint source pollution. This assistance is provided through Soil Conservation Districts, Resource Conservation and Development Districts, Watershed Districts, universities, and other groups. Additionally, a portion of the TDA-ARCF is used to implement information and education projects statewide, with the focus on landowners, producers, and managers of Tennessee farms and forests.

Participating contractors in the program are encouraged to develop a watershed emphasis for their individual areas of responsibility, focusing on waters listed on the Tennessee 303(d) List as being impaired by agriculture. Current guidelines for the TDA-ARCF are available. Landowners can receive up to 75% of the cost of the BMP as a reimbursement.

Since January of 1999, the Department of Agriculture and the Department of Environment and Conservation have had a Memorandum of Agreement whereby complaints received by TDEC concerning agriculture or silviculture projects would be forwarded to TDA for investigation and possible correction. Should TDA be unable to obtain correction, they would assist TDEC in the enforcement against the violator. More information forestry BMPs is available at:
http://tennessee.gov/agriculture/forestry/BMPs.pdf, and the complaint form is available at: http://tennessee.gov/environment/wpc/logform.php.

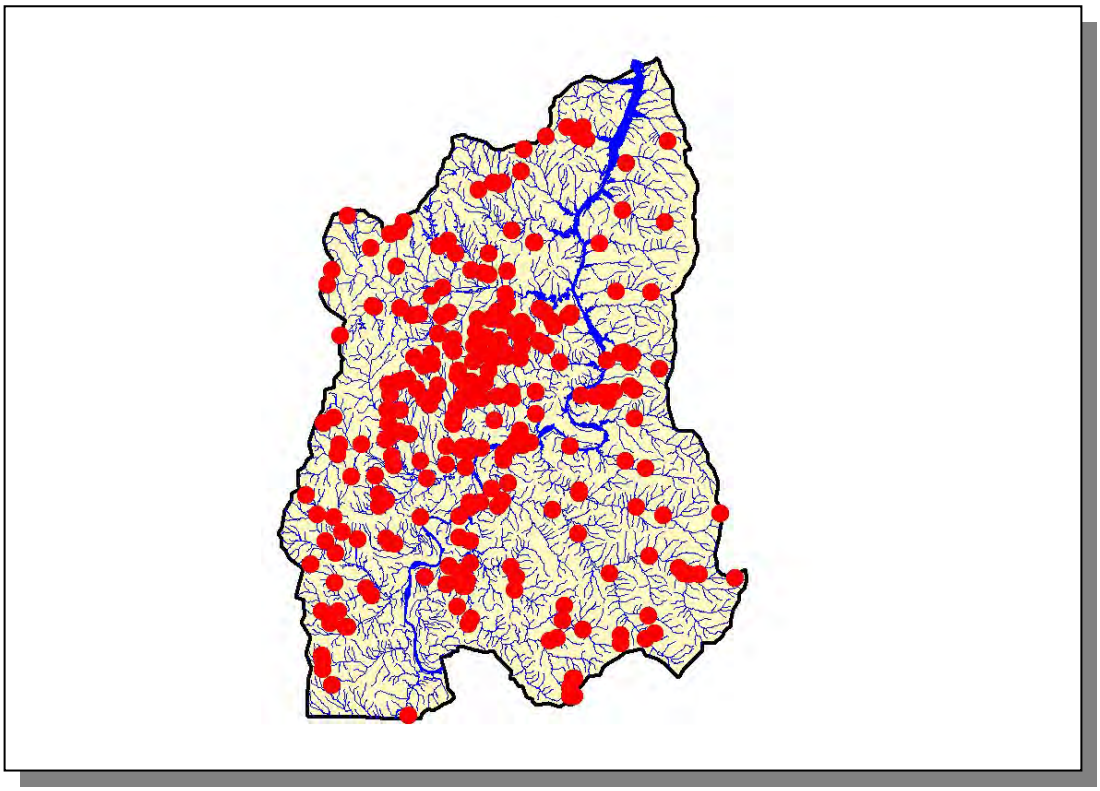


Figure 5-7. Location of BMPs installed from 1999 through 2003 in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs. *More information is provided in Appendix V.*

CHAPTER 6

RESTORATION PRIORITIES IN THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED

6.1. BACKGROUND.

The Watershed Water Quality Management Plan serves as a comprehensive inventory of resources and stressors in the watershed, a recommendation for control measures, and a guide for planning activities in the next five-year watershed cycle and beyond. Water quality improvement will be a result of implementing both regulatory and nonregulatory programs.

In addition to the NPDES program, some state and federal regulations, such as the TMDL and ARAP programs, address point and nonpoint issues. Construction and MS4 storm water rules (implemented under the NPDES program) have transitioned from Phase 1 to Phase 2. More information on storm water rules may be found at: http://www.state.tn.us/environment/wpc/stormh2o/MS4.htm.

This Chapter addresses point and nonpoint source approaches to water quality problems in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

6.2. COMMENTS FROM PUBLIC MEETINGS. Watershed meetings are open to the public, and most meetings were represented by citizens who live in the watershed, NPDES permitees, business people, farmers, and local river conservation interests. Locations for meetings were chosen after consulting with people who live and work in the watershed. Everyone with an interest in clean water is encouraged to be a part of the public meeting process. The times and locations of watershed meetings are posted at: The times and locations of watershed meetings are posted at: http://www.state.tn.us/environment/wpc/watershed/public.php.

6.2.A. Year 1 Public Meeting. The first Tennessee Western Valley (Beech River) Watershed public meeting was held as two meetings: October 26, 1998 at Camden Town Hall and October 27, 1998 at Savannah City Hall. The goals of the meeting were to: (1) present, and review the objectives of, the Watershed Approach, (2) introduce local, state, and federal agency and nongovernment organization partners, (3) review water quality monitoring strategies, and (4) solicit input from the public.

Major Concerns/Comments

- TVA and TDEC/WPC need to coordinate monitoring efforts in order to be efficient and make the most uses of resources
- Savannah needs to make long-range plans for expansion of their wastewater treatment system and will need to have an allocation for a discharge into the Tennessee River

6.2.B. Year 3 Public Meeting. The second Tennessee Western Valley (Beech River) Watershed public meeting was held March 15, 2001 at the Decaturville Courthouse. The goals of the meeting were to: (1) provide an overview of the watershed approach, (2) review the monitoring strategy, (3) summarize the most recent water quality assessment, (4) discuss the TMDL schedule and citizens' role in commenting on draft TMDLs, and (5) discuss BMPs and other nonpoint source tools available through the Tennessee Department of Agriculture 319 Program and NRCS conservation assistance programs.

Major Concerns/Comments

- Shallow aquifers were once available for single houses. Now, they are contaminated so wells have to be drilled deeper
- More BMPs are needed. More grass should be planted along eroding stream banks
- Some building is going on in the floodplain.

6.2.C. Year 5 Public Meeting. The third scheduled Tennessee Western Valley (Beech River) Watershed public meeting was held December 1, 2005 at Community South Bank in Parsons. The meeting featured six educational components:

- Overview of draft Watershed Water Quality Management Plan slide show
- Benthic macroinvertebrate samples and interpretation
- SmartBoard™ with interactive GIS maps
- "How We Monitor Streams" self-guided slide show
- "Why We Do Biological Sampling" self-guided slide show
- TVA display

In addition, citizens had the opportunity to make formal comments on the draft Watershed Water Quality Management Plan.

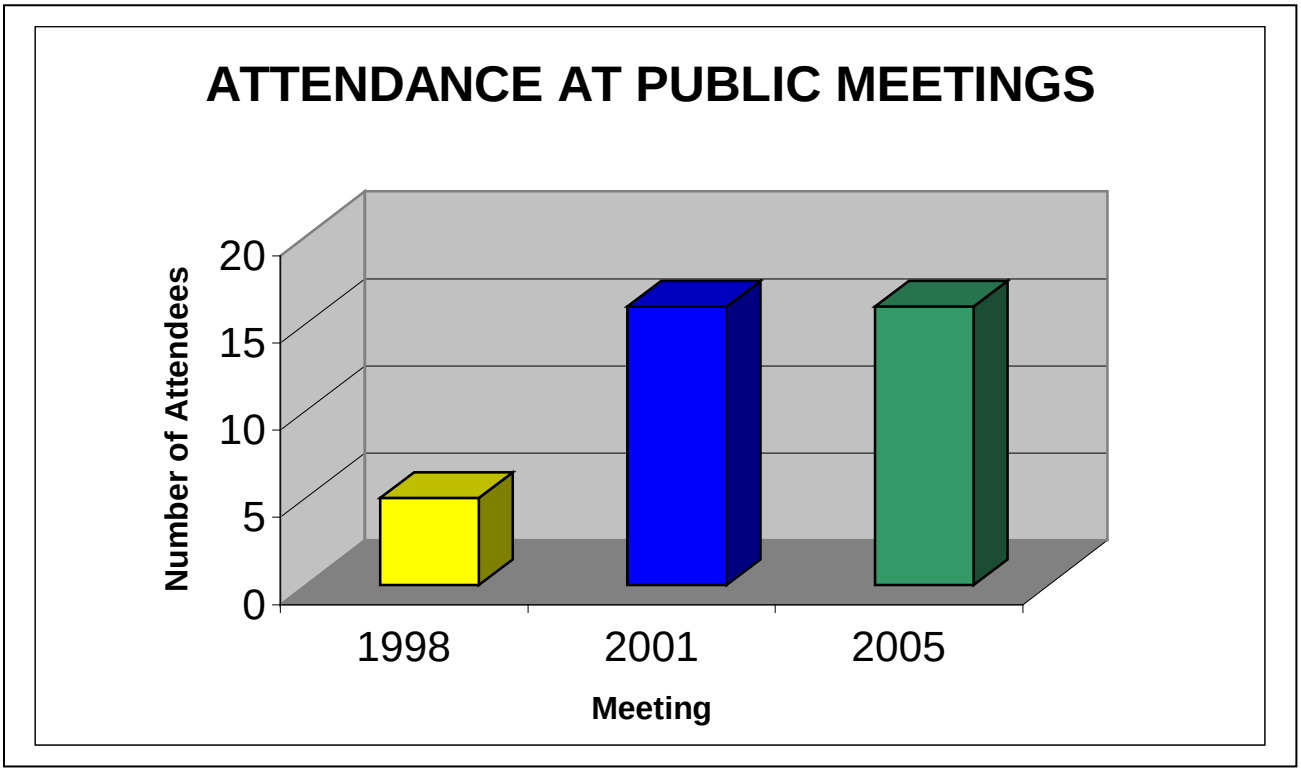


Figure 6-1. Attendance at Public Meetings in the Tennessee Western Valley (Beech River) Watershed. *1998 attendance number represents Tennessee Western Valley (Beech River and KY Lake) Watersheds joint meeting. Attendance numbers do not include TDEC personnel.*

Figure 6-2. Watershed Meetings Provide a Good Opportunity for Citizens to Speak with Staff in a less Formal Setting.

6.3. APPROACHES USED.

6.3.A. Point Sources. Point source contributions to stream impairment are primarily addressed by NPDES and ARAP permit requirements and compliance with the terms of the permits. Notices of NPDES and ARAP draft permits available for public comment can be viewed at http://www.state.tn.us/environment/wpc/wpcppo/. Discharge monitoring data submitted by NPDES-permitted facilities may be viewed at http://www.epa.gov/enviro/html/pcs/pcs_query_java.html.

The purpose of the TMDL program is to identify remaining sources of pollution and allocate pollution control needs in places where water quality goals are still not being achieved. TMDL studies are tools that allow for a better understanding of load reductions necessary for impaired streams to return to compliance with water quality standards. More information about Tennessee's TMDL program may be found at: http://www.state.tn.us/environment/wpc/tmdl/.

Approved TMDL:

Eagle Creek. TMDL for ammonia toxicity, organic enrischment, and low dissolved oxygen in the Tennessee Western Valley (Beech River) Watershed. Approved May 6, 2004.
http://www.state.tn.us/environment/wpc/tmdl/approvedtmdl/EagleDONH3_05.pdf

TMDLs are prioritized for development based on many factors.

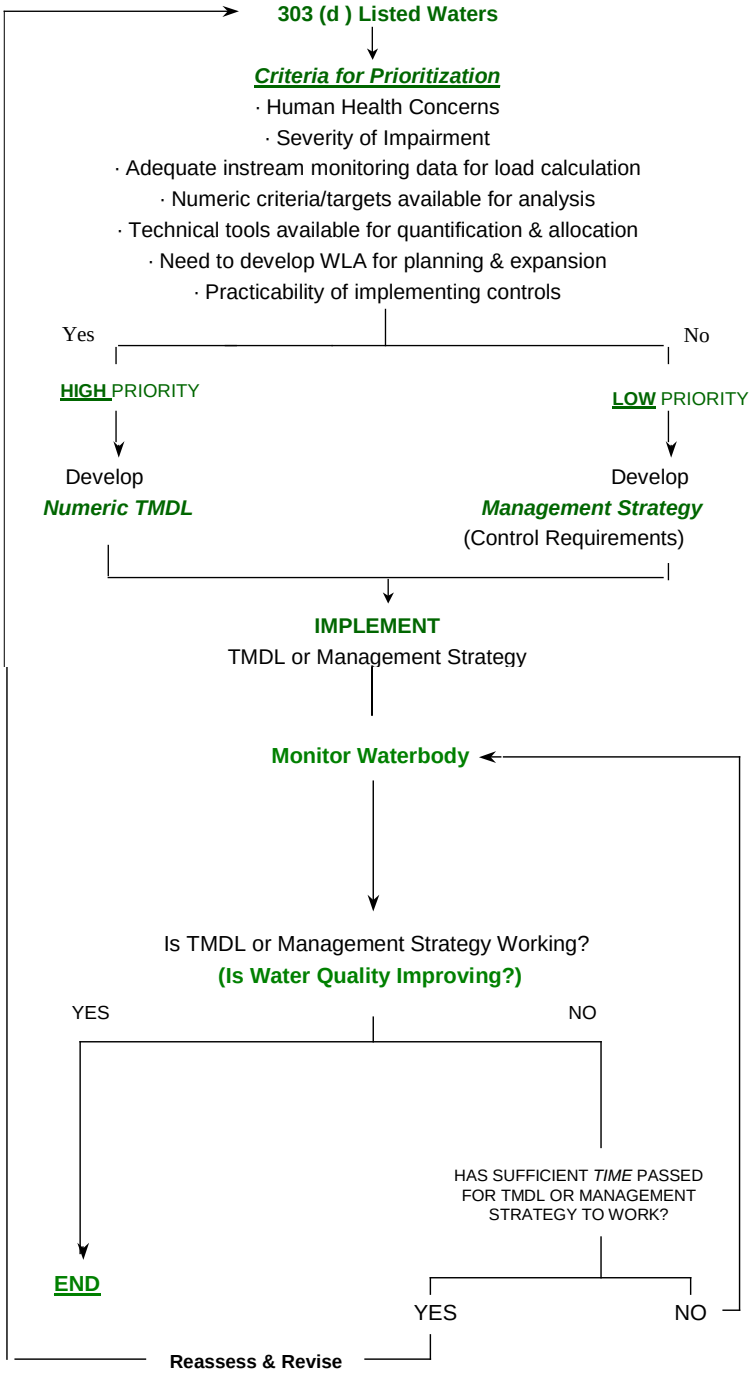


Figure 6.3. Prioritization Scheme for TMDL Development.

6.3.B. Nonpoint Sources

Common nonpoint sources of pollution include urban runoff, riparian vegetation removal, and inappropriate land development, agricultural, and road construction practices. Since nonpoint pollution exists essentially everywhere rain falls, existing point source regulations can have only a limited effect. Other measures are, therefore, necessary.

There are several state and federal regulations that address some of the contaminants impacting waters in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed. Most of these are limited to only point sources: a pipe or ditch. Often, controls of point sources are not sufficient to protect waters, so other measures are necessary. Some measures include efforts by landowners and volunteer groups and the possible implementation of new regulations. Many agencies, such as the Tennessee Department of Agriculture (TDA) and the Natural Resources Conservation Service (NRCS), offer financial assistance to landowners for corrective actions (like Best Management Practices) that may be sufficient for recovery of impacted streams. Many nonpoint problems will require an active civic involvement at the local level geared towards establishment of improved zoning guidelines, building codes, streamside buffer zones and greenways, and general landowner education.

The following text describes types of impairments, possible causes, and suggested improvement measures. Restoration efforts should not be limited to only those streams and measures suggested below.

6.3.B.i. Sedimentation.

6.3.B.i.a. From Construction Sites. Construction activities have historically been considered “nonpoint sources.” In the late 1980’s, EPA designated them as being subject to NPDES regulation if more than 5 acres were being disturbed. In the spring of 2003, that threshold became 1 acre. The general permit issued for such construction sites establishes conditions for maintenance of the sites to minimize pollution from storm water runoff, including requirements for installation and inspection of erosion controls. Also, the general permit imposes more stringent inspection and self-monitoring requirements on sites in the watershed of streams that are already impaired due to sedimentation. Examples in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed are Snake Creek, Stanley Branch, and an unnamed tributary to Little Beech Creek. Regardless of the size, no construction site is allowed to cause a condition of pollution.

Construction sites within a sediment-impaired watershed may also have higher priority for inspections by WPC personnel, and are likely to have enforcement actions for failure to control erosion.

The same requirements apply to sites that drain into high quality waters. Walker Branch, Pompeys Branch, and Right Fork of Whites Creek are examples of high quality streams in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

6.3.B.i.b. From Channel and/or Bank Erosion. Many streams within the Tennessee Western Valley (Beech River) Watershed suffer from varying degrees of streambank erosion. When steam channels are altered, or large tracts of land are cleared, storm water runoff, will cause banks to become unstable and highly erodable. Heavy livestock traffic can also severely disturb banks. Destabilized banks contribute to sediment load and to the loss of beneficial riparian vegetation to the stream. Some inappropriate agricultural practices have impacted the hydrology and morphology of stream channels in this watershed.

Several agencies such as the NRCS, TVA, and TDA, as well as watershed citizen groups, are working to stabilize portions of stream banks using bioengineering and other techniques. Many of the affected streams, like Mud Creek and Chalk Creek, could benefit from these types of projects. Other methods or controls that might be necessary to address common problems are:

Voluntary activities

- Re-establish bank vegetation (examples: Roberts Creek, Jack Branch, North Fork Blue Creek, Snake Creek, and an unnamed tributary to Little Beech Creek).
- Establish off-channel watering areas for livestock by moving watering troughs and feeders back from stream banks (examples: an unnamed tributary of Little Beech Creek).
- Limit cattle access to streams and bank vegetation (example: Little Beech Creek and an unnamed tributary to Little Beech Creek).

Additional strategies

- Increase efforts in the Master Logger program to recognize impaired streams and require more effective management practices (examples: Roberts Creek, Jack Branch, and North Fork Blue Creek).
- Better community planning for the impacts of development on small streams, especially development in growing areas (example: Eagle Creek).
- Limit livestock access to streams and bank vegetation (example: Little Beech Creek).
- Require post-construction run-off rates to be no greater than pre-construction rates in order to avoid in-channel erosion.
- Implement additional restrictions on logging in streamside management zones (examples: Roberts Creek, Jack Branch, and North Fork Blue Creek).
- Limit clearing of stream and ditch banks (examples: Snake Creek, Stanley Branch, and Chalk Creek). *Note: Permits may be required for any work along streams.*
- Limit to road and utilities crossings of streams.
- Restrict the use of off-highway vehicles on stream banks and in stream channels.

6.3.B.i.c. From Agriculture and Silviculture. The Water Quality Control Act exempts normal agricultural and silvicultural practices that do not result in a point source discharge. Nevertheless, efforts are being made to address impacts due to these exempted practices.

The Master Logger Program has been in place for several years to train loggers how to install Best Management Practices that lessen the impact of logging activities on streams. Recently, laws and regulations were enacted which established that these BMPs must be used or the Commissioners of the Departments of Environment and Conservation and of Agriculture would be permitted to stop the logging operation that, upon failing to install these BMPs, was causing impacts to streams. There have been several streams impacted by silviculture such as Roberts Creek, Jack Branch, and North Fork Blue Creek in Humphreys County.

Since the Dust Bowl era, the agriculture community has strived to protect the soil from wind and soil erosion. Agencies such as the Natural resources Conservation Service (NRCS), the University of Tennessee Agricultural Extension Service, and the Tennessee Department of Agriculture have worked to identify better ways of farming, to educate the farmers, and to install the methods that address the sources of some of the impacts due to agriculture. Cost sharing is available for many of these measures.

Many sediment problems traceable to agricultural practices also involve riparian loss due to close row cropping or pasture clearing for grazing. Agriculturally impacted streams that could benefit from the establishment of riparian buffer zones include Mud Creek, Stanley Branch, Snake Creek, and an unnamed tributary to Little Beech Creek.

6.3.B.ii. Pathogen Contamination.

Possible sources of pathogens are inadequate or failing septic tank systems, overflows or breaks in public sewer collection systems, poorly disinfected discharges from sewage treatment plants, and fecal matter from pets, livestock and wildlife washed into streams and storm drains. Permits issued by the Division of Water Pollution Control regulate discharges from point sources and require adequate control for these sources. Individual homes are required to have subsurface, on-site treatment (i.e., septic tank and field lines) if public sewers are not available. The Division of Ground Water Protection within the Jackson, Columbia, and Nashville Field Offices and delegated county health departments regulate septic tanks and field lines. In addition to discharges to surface waters, businesses may employ either subsurface or surface disposal of wastewater. The Division of Water Pollution Control regulates surface water disposal.

Currently, only one stream system in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed is known to have excessive pathogen contamination. This is Eagle Creek near the I-40 Exit 126. Soils in this area are poor for septic tanks, and two small domestic treatment systems do not provide adequate treatment. One business served by one system is no longer in service. The county governments of Benton and Decatur Counties are in the process of providing a regional treatment plant. It is currently in the design stage to serve this area.

Other measures that may be necessary to control pathogens are:

Voluntary activities

- Off-channel watering of livestock.
- Limit livestock access to streams.

- Improve and educate on the proper management of animal waste from feeding operations.
- Proper design and maintenance of septic tank and other wastewater treatment systems.

Enforcement strategies

- Strengthen enforcement of regulations governing on-site wastewater treatment.
- Determine timely and appropriate enforcement for non-complying sewage treatment plants, large and small, and their collection systems.
- Identify Concentrated Animal Feeding Operations not currently permitted.

Additional strategies

- Develop intensive planning in areas where sewer is not available and treatment by subsurface disposal is not an option due to poor soils, floodplains, or high water tables.
- Discourage the creation of "duck holes" that attract waterfowl.
- Develop and enforce leash laws and controls on pet fecal material.
- Greater efforts by sewer utilities to identify leaking lines or overflowing manholes.

6.3.B.iii. Excessive Nutrients and/or Dissolved Oxygen Depletion.

These two impacts are usually listed together because high nutrients often contribute to low dissolved oxygen within a stream. Since nutrients often have the same source as pathogens, the measures previously listed can also address many of these problems. Elevated nutrient loadings are also often associated with urban runoff from impervious surfaces, from fertilized lawns and croplands, and faulty sewage disposal processes. Nutrients are often transported with sediment, so many of the measures designed to reduce sediment runoff will also aid in preventing organic enrichment of streams and lakes.

Other sources of nutrients can be addressed by:

Voluntary activities

- Educate homeowners and lawn care companies in the proper application of fertilizers.
- Encourage landowners, developers, and builders to leave stream buffer zones. Streamside vegetation can filter out many nutrients and other pollutants before they reach the stream. These riparian buffers are also vital along livestock pastures. Examples of streams that could benefit are Mud Creek, Whiteoak Creek, Stanley Branch, Chambers Creek, Eagle Creek, an unnamed tributary to Little Beech Creek, and areas along stream channels.
- Use grassed drainage ways that can remove fertilizer before it enters streams (examples: Mud Creek and Stanley Branch).
- Use native plants for landscaping since they don't require as much fertilizer and water.

Physical changes to streams can prevent them from providing enough oxygen to biodegrade the materials that are naturally present. A few additional actions can address this problem:

- Maintain shade over a stream. Cooler water can hold more oxygen and retard the growth of algae. As a general rule, all stream channels suffer from some canopy removal. An intact riparian zone also acts as a buffer to filter out nutrient loads before they enter the water.
- Discourage impoundments. Ponds and lakes do not aerate water. An example of a stream impacted by an impoundment is Brown's Creek below Brown's Reservoir. *Note: Permits may be required for any work on a stream, including impoundments.*

Regulatory strategies.

- Strengthen enforcement of regulations governing on-site wastewater treatment (example: Eagle Creek, where failing septic tank systems and domestic treatment plants have been ordered to upgrade).
- Impose more stringent permit limits for nutrients discharged from sewage treatment plants.
- Timely and appropriate enforcement for noncomplying sewage treatment plants, large and smnall, and their collection system.
- Identify Concentrated Animal Feeding Operations not currently permitted.

6.3.B.iv. Toxins and Other Materials.

Although some toxic substances are discharged directly into waters of the state from a point source, much of these materials are washed in during rainfalls from an upland location, or via improper waste disposal that contaminates groundwater. Beech Creek is an example of a stream impaired due to past improper waste disposal (PCBs). In the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed, no streams are currently identified as being damaged by storm water runoff from industrial facilities or urban areas. More stringent inspection and regulation of permitted industrial facilities, and local strormwater quality initiatives and regulations, could help reduce the amount of contaminated runoff reaching state waters.

Many materials enter our streams due to apathy, or lack of civility or knowledge by the public. Litter in roadside ditches, garbage bags tossed over bridge railings, paint brushes washed off over storm drains, and oil drained into ditches are all blatant examples of pollution in streams.

Some of these problems can be addressed by:

Voluntary activities

- Provide public education.
- Paint warnings on storm drains that connect to a stream. (This would benefit streams in the Savannah area).
- Sponsor community clean-up days.
- Landscape public areas.

- Encourage public surveillance of their streams and reporting of dumping activities to their local authorities.

Enforcement strategies

- Prohibit illicit discharges to storm drains.
- Strengthen litter law enforcement at the local level.

6.3.B.v. Habitat Alteration.

The alteration of the habitat within a stream can have severe consequences. Whether it is the removal of the vegetation providing a root system network for holding soil particles together, the release of sediment, which increases the bed load and covers benthic life and fish eggs, the removal of gravel bars, "cleaning out" creeks with heavy equipment, or the impounding of the water in ponds and lakes, many alterations impair the use of the stream for designated uses. Habitat alteration also includes the draining or filling of wetlands.

Individual landowners and developers are responsible for the vast majority of stream alterations. Some measures that can help address these problems are:

Voluntary activities

- Sponsor litter pickup days to remove litter that might enter streams.
- Organize stream cleanups removing trash, limbs and debris before they cause blockage.
- Avoid use of heavy equipment to "clean out" streams (examples: Hardin Creek and Indian Creek).
- Plant native vegetation along streams to stabilize banks and provide habitat (examples: Roberts Creek, Jacks Branch, North Fork Blue Creek, and Horse Creek. Horse Creek, in the Savannah area, has several bank stabilization projects using bioengineering techniques).
- Encourage developers to avoid extensive use of culverts in streams.
- Restoring channelized and altered streams to stable channels with adequate riparian zones. Whiteoak Creek has been altered with heavy equipment and could benefit by a restoration project.

Current regulations

- Restrict modification of streams by such means as culverting, lining, or impounding.
- Require mitigation for impacts to streams and wetlands when modifications are allowed.

Additional Enforcement

- Increased enforcement may be needed when violations of current regulations occur.

APPENDIX II

ID	NAME	HAZARD		ID	NAME	HAZARD
207001	Catfish Haven #1	3		557009	Tanyard Springs	2
207002	Re-Fish #1	3		397022	Duck	L
207003	Louis lacy Pond	L		917001	Weatherford-Bear Creek 1B	2
207004	Re-Fish #2	3		917002	Weatherford-Bear Creek 2	2
207007	Jackson	3		097019	Caledonia Creek (9-NW-1)	3
367001	Timberline Estates Lake	S		397005	Barry	3
367002	Rego	L		397017	Pin Oak	F
397001	Browns Creek Lake	2		397019	Beecham Lake	L
397002	Cub Creek Lake	3		207008	Lacy Lake #2	S
397004	Hesse Lake	3		367007	Leisure Lake	1
397007	Lexington Mgmt	3		557027	Peoples	S
379010	Hopkins	3				

Table A2-1. Inventoried Dams in the Tennessee Portion of the Tennessee western Valley (Beech River) Watershed. *Hazard Codes: F, Federal; 1, High; (S, 2), Significant; (L, 3). TDEC only regulates dams indicated by a numeric hazard score.*

LAND COVER/LAND USE	ACRES	% OF WATERSHED
Open Water	25,987	1.98
Other Grasses	718	0.05
Pasture/Hay	163,826	12.49
Row Crops	139,196	10.61
Woody Wetlands	31,631	2.41
Emergent Herbaceous Wetlands	3,990	0.30
Deciduous Forest	701,538	53.49
Mixed Forest	117,403	8.95
Evergreen Forest	93,073	7.10
High Intensity: Commercial/Industrial	2,507	0.19
High Intensity: Residential	715	0.05
Low Intensity: Residential	4,107	0.31
Quarries/Strip Mines/Gravel Pits	876	0.07
Bare Rock/Sand/Clay	23	0.00
Transitional	25,833	1.97
Total	**1,311,423**	**100.00**

Table A2-2. Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley-Beech River Watershed. *Data are from Multi-Resolution Land Characterization (MRLC) derived by applying a generalized Anderson level II system to mosaics of Landsat thematic mapper images collected every five years.*

ECOREGION	REFERENCE STREAM	WATERSHED (HUC)	
Blackland Prairie (65a)	Unnamed Tributary to Muddy Creek (65A01)	Little Hatchie River	08010207
	Wardlow Creek (65A03)	TWV-Beech River	06040001
Southeastern Plains and Hills (65e)	Pompeys Branch (65E04)	Pickwick lake	06030005
	Griffin Creek (65E06)	NF Forked Deer River	08010204
	Harris Creek (65E08)	SF Forked Deer River	08010205
	Marshall Creek (65E10)	Hatchie River	08010208
	West Fork Spring Creek (65E11)	Hatchie River	08010208
Fall Line Hills (65i)	Battles Branch (65I02)	TWV-Beech River	06040001
Transition Hills (65j)	Dry Creek (65J05)	Pickwick Lake	06030005
	Pompeys Branch (65J04)	Pickwick lake	06030005
	Right Fork Whites Creek (65J06)	TWV-Beech River	06040001
	Right Fork Whites Creek (65J11)	TWV-Beech River	06040001
Western Highland Rim (71f)	South Harpeth Creek (71F12)	Harpeth River	05130204
	Wolf Creek (71F16)	Lower Duck River	06040003
	Brush Creek (71F19)	Buffalo River	06040004
	Swanegan Creek (71F27)	Pickwick lake	06030005
	Little Swan Creek (71F28)	Lower Duck River	06040003
	Hurricane Creek (71F29)	Lower Duck River	06040003

Table A2-3. Ecoregion Monitoring Sites in Ecoregions 65a, 65e, 65i, and 71f.

CODE	NAME	AGENCY	AGENCY ID
169	TDEC/DNH Wilkinson Pond Slough Site	TDEC/DNH	S.USTNHP 765
170	TDEC/DNH White Oak Swamp Site	TDEC/DNH	
255	USACOE-Nashville Client Site	USACOE-Nashville	
277	TDOT SR 69 Mitigation Site	TDOT	
286	TDOT I-40 Mitigation Site	TDOT	
297	TDOT SR 69 Mitigation/Permit Site	TDOT	
318	TDOT SR 100 Mitigation/Permit Site	TDOT	
330	TDOT SR 114 Mitigation/Permit Site	TDOT	
331	TDOT SR 114 Mitigation/Permit Site	TDOT	
332	TDOT SR 114 Mitigation/Permit Site	TDOT	
448	TDOT SR 20 Mitigation Site	TDOT	
471	TDOT SR 69 Permit Site	TDOT	
846	USFWS William Patterson WRP Site	USFWS	
847	USFWS Jimmy Carroll WRP Site	USFWS	Tract 4198, Farm 2331
848	USFWS Jimmy Carroll WRP Site	USFWS	Tract 4504, Farm 2332
849	USFWS Jimmy Carroll WRP Site	USFWS	Tract 4499, Farm 2332
850	USFWS Jimmy Carroll WRP Site	USFWS	Tract 4501, Farm 2331
882	USFWS Whiteway Farms WRP Site	USFWS	Tract 2101, Farm 2226
891	USFWS Altha Shaw WRP Site	USFWS	Tract 1714, Farm 3194
894	USFWS Frank Fisher WRP Site	USFWS	Tract 513, Farm 113
895	USFWS Tommy Graham WRP Site	USFWS	Tract 1521, Farm 820
1176	Brad Bingham Thesis: Site 1 Milledgeville Quad	USFWS	Bingham-Milledgeville.1
1177	Brad Bingham Thesis: Site 2 Milledgeville Quad	USFWS	Bingham-Milledgeville.2
1178	Brad Bingham Thesis: Site 3 Milledgeville Quad	USFWS	Bingham-Milledgeville.3
1179	Brad Bingham Thesis: Site 4 Milledgeville Quad	USFWS	Bingham-Milledgeville.4
1180	Brad Bingham Thesis: Site 5 Milledgeville Quad	USFWS	Bingham-Milledgeville.5
1181	Brad Bingham Thesis: Site 6 Milledgeville Quad	USFWS	Bingham-Milledgeville.6
1182	Brad Bingham Thesis: Site 7 Milledgeville Quad	USFWS	Bingham-Milledgeville.7
1183	Brad Bingham Thesis: Site 8 Milledgeville Quad	USFWS	Bingham-Milledgeville.8
1184	Brad Bingham Thesis: Site 9 Milledgeville Quad	USFWS	Bingham-Milledgeville.9
1185	Brad Bingham Thesis: Site 10 Milledgeville Quad	USFWS	Bingham-Milledgeville.10
1186	Brad Bingham Thesis: Site 11 Milledgeville Quad	USFWS	Bingham-Milledgeville.11
1187	Brad Bingham Thesis: Site 12 Milledgeville Quad	USFWS	Bingham-Milledgeville.12
1188	Brad Bingham Thesis: Site 13 Milledgeville Quad	USFWS	Bingham-Milledgeville.13
1189	Brad Bingham Thesis: Site 14 Milledgeville Quad	USFWS	Bingham-Milledgeville.14
1190	Brad Bingham Thesis: Site 15 Milledgeville Quad	USFWS	Bingham-Milledgeville.15
1191	Brad Bingham Thesis: Site 16 Milledgeville Quad	USFWS	Bingham-Milledgeville.16
1192	Brad Bingham Thesis: Site 17 Milledgeville Quad	USFWS	Bingham-Milledgeville.17
1193	Brad Bingham Thesis: Site 18 Milledgeville Quad	USFWS	Bingham-Milledgeville.18
1194	Brad Bingham Thesis: Site 19 Milledgeville Quad	USFWS	Bingham-Milledgeville.19
1195	Brad Bingham Thesis: Site 20 Milledgeville Quad	USFWS	Bingham-Milledgeville.20
1196	Brad Bingham Thesis: Site 21 Milledgeville Quad	USFWS	Bingham-Milledgeville.21
1197	Brad Bingham Thesis: Site 22 Milledgeville Quad	USFWS	Bingham-Milledgeville.22
1198	Brad Bingham Thesis: Site 23 Milledgeville Quad	USFWS	Bingham-Milledgeville.23
1199	Brad Bingham Thesis: Site 24 Milledgeville Quad	USFWS	Bingham-Milledgeville.24
1200	Brad Bingham Thesis: Site 25 Milledgeville Quad	USFWS	Bingham-Milledgeville.25
1201	Brad Bingham Thesis: Site 26 Milledgeville Quad	USFWS	Bingham-Milledgeville.26
1202	Brad Bingham Thesis: Site 27 Milledgeville Quad	USFWS	Bingham-Milledgeville.27
1203	Brad Bingham Thesis: Site 28 Milledgeville Quad	USFWS	Bingham-Milledgeville.28
1204	Brad Bingham Thesis: Site 29 Milledgeville Quad	USFWS	Bingham-Milledgeville.29

CODE	NAME	AGENCY	AGENCY ID
1205	Brad Bingham Thesis: Site 30 Milledgeville Quad	USFWS	Bingham-Milledgeville.30
1206	Brad Bingham Thesis: Site 31 Milledgeville Quad	USFWS	Bingham-Milledgeville.31
1207	Brad Bingham Thesis: Site 32 Milledgeville Quad	USFWS	Bingham-Milledgeville.32
1208	Brad Bingham Thesis: Site 33 Milledgeville Quad	USFWS	Bingham-Milledgeville.33
1209	Brad Bingham Thesis: Site 34 Milledgeville Quad	USFWS	Bingham-Milledgeville.34
1255	TWRA Site	TWRA	
1257	TWRA Site	TWRA	
1511	USACOE-ORN PN 96-24 Packaging Corp. of America Site	USFWS	
1521	USFWS ARAP 96-009 Karl Forsbach 95-816 Site	USFWS	
1528	OSA-ORN PDN NWP #18 Site	USFWS	
1846	NRCS Site	NRCS	
1847	NRCS Site	NRCS	
1859	NRCS Site	NRCS	
1957	TWRA Beech River Site	TWRA	
1958	TWRA Beech River Site	TWRA	
1959	TWRA Beech River Site	TWRA	
1978	TWRA White Oak Swamp Site	TWRA	
1979	TWRA White Oak Swamp Site	TWRA	
1980	TWRA White Oak Swamp Site	TWRA	
1981	TWRA White Oak Swamp Site	TWRA	
1982	TWRA White Oak Swamp Site	TWRA	
1983	TWRA White Oak Swamp Site	TWRA	
1984	TWRA White Oak Swamp Site	TWRA	
1985	TWRA White Oak Swamp Site	TWRA	
1986	TWRA White Oak Swamp Site	TWRA	
1987	TWRA White Oak Swamp Site	TWRA	
1988	TWRA White Oak Swamp Site	TWRA	
1989	TWRA White Oak Swamp Site	TWRA	
1990	TWRA White Oak Swamp Site	TWRA	
1991	TWRA White Oak Swamp Site	TWRA	
1992	TWRA White Oak Swamp Site	TWRA	
1993	TWRA White Oak Swamp Site	TWRA	
2126	TWRA White Oak Swamp Site	TWRA	
2127	TWRA White Oak Swamp Site	TWRA	
2376	TWRA White Oak Swamp Site	TWRA	
2449	TWRA White Oak Swamp Site	TWRA	
2450	TWRA White Oak Swamp Site	TWRA	
2451	TWRA White Oak Swamp Site	TWRA	
2452	TWRA White Oak Swamp Site	TWRA	
2453	TWRA White Oak Swamp Site	TWRA	
2454	TWRA White Oak Swamp Site	TWRA	
2455	TWRA White Oak Swamp Site	TWRA	
2456	TWRA White Oak Swamp Site	TWRA	
2457	TWRA White Oak Swamp Site	TWRA	
2458	TWRA White Oak Swamp Site	TWRA	
2459	TWRA White Oak Swamp Site	TWRA	
2460	TWRA White Oak Swamp Site	TWRA	
2461	TWRA White Oak Swamp Site	TWRA	
2462	TWRA White Oak Swamp Site	TWRA	
2463	TWRA White Oak Swamp Site	TWRA	
2464	TWRA White Oak Swamp Site	TWRA	

CODE	NAME	AGENCY	AGENCY ID
2602	TWRA Walker Branch Site	TWRA	
2620	TWRA Beech River Site	TWRA	
2621	TWRA Beech River Site	TWRA	
2622	TWRA Beech River Site	TWRA	
2623	TWRA Beech River Site	TWRA	
2624	TWRA Beech River Site	TWRA	
2625	TWRA Beech River Site	TWRA	
2626	TWRA Beech River Site	TWRA	
2627	TWRA Beech River Site	TWRA	
2628	TWRA Beech River Site	TWRA	
2629	TWRA Beech River Site	TWRA	
2630	TWRA Beech River Site	TWRA	
2631	TWRA Beech River Site	TWRA	
2632	TWRA Beech River Site	TWRA	
2633	TWRA Beech River Site	TWRA	
2634	TWRA Beech River Site	TWRA	
2635	TWRA Beech River Site	TWRA	
2636	TWRA Beech River Site	TWRA	
2637	TWRA Beech River Site	TWRA	
2638	TWRA Beech River Site	TWRA	
2639	TWRA Beech River Site	TWRA	
2640	TWRA Beech River Site	TWRA	
2641	TWRA Beech River Site	TWRA	
2642	TWRA Beech River Site	TWRA	
2643	TWRA Beech River Site	TWRA	
2644	TWRA Beech River Site	TWRA	
2645	TWRA Beech River Site	TWRA	
2646	TWRA Beech River Site	TWRA	
2647	TWRA Beech River Site	TWRA	
2648	TWRA Beech River Site	TWRA	
2649	TWRA Beech River Site	TWRA	
2650	TWRA Beech River Site	TWRA	
2651	TWRA Beech River Site	TWRA	
2652	TWRA Beech River Site	TWRA	
2653	TWRA Beech River Site	TWRA	
2654	TWRA Beech River Site	TWRA	
2655	TWRA Beech River Site	TWRA	
2656	TWRA Beech River Site	TWRA	
2657	TWRA Beech River Site	TWRA	
2658	TWRA Beech River Site	TWRA	
2659	TWRA Beech River Site	TWRA	
2660	TWRA Beech River Site	TWRA	
2661	TWRA Beech River Site	TWRA	
2662	TWRA Beech River Site	TWRA	
2663	TWRA Beech River Site	TWRA	
2664	TWRA Beech River Site	TWRA	
2665	TWRA Beech River Site	TWRA	
2666	TWRA Beech River Site	TWRA	
2667	TWRA Beech River Site	TWRA	
2669	TWRA Beech River Site	TWRA	
2670	TWRA Beech River Site	TWRA	

CODE	NAME	AGENCY	AGENCY ID
2671	TWRA Beech River Site	TWRA	
2672	TWRA Beech River Site	TWRA	
2673	TWRA Beech River Site	TWRA	
2674	TWRA Beech River Site	TWRA	
2678	NRCS Site	NRCS	
2682	NRCS Site	NRCS	
2683	NRCS Site	NRCS	
2691	NRCS Site	NRCS	
2703	TWRA Owl Creek Bottoms Site	TDEC/DNH	S.USTNHP 1430
2730	USACOE-Nashville Client Site	USACOE-Nashville	960047842

Table A2-4. Wetland Sites in the Tennessee Portion of the Tennessee Western Valley-Beech River Watershed in TDEC Database. *TDEC, Tennessee Department of Environment and Conservation; USACOE-Nashville, United States Army Corps of Engineers-Nashville District; TDOT, Tennessee Department of Transportation; NRCS, Natural Resources Conservation Service; USFWS, United States Fish and Wildlife Service; TWRA, Tennessee Wildlife Resources Agency; DNH, Division of Natural Heritage.* ***This table represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands in the watershed.***

APPENDIX III

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Battles Branch	TN06040001060_0100	4.4
Beech Creek	TN060400011163_1000	3.0
Beech Creek	TN060400011163_2000	6.0
Beech River	TN06040001802_1000	33.3
Big Creek	TN06040001802_1200	32.2
Bingham Creek	TN06040001043_0820	8.5
Cedar Creek	TN060400011122_1000	15.7
Chambers Creek	TN06040001060_1000	10.1
Clear Creek	TN06040001054_0300	19.6
Crooked Creek	TN060400011011_1000	20.9
Cub Creek	TN06040001643_1000	21.2
Cypress Creek	TN060400011090_1000	29.3
Eagle Creek	TN060400011219_0100	32.5
Eagle Creek	TN06040001364_1000	20.6
Gunn Hollow Branch	TN060400011219_0300	3.1
Hardin Creek	TN060400011219_1000	17.3
Hardin Creek	TN060400011219_2000	11.6
Holland Creek	TN06040001064_1100	25.4
Horse Creek	TN06040001064_1000	40.8
Hurricane Creek	TN06040001043_0700	30.7
Hurricane Creek	TN06040004007_0200	17.8
Indian Creek	TN060400011303_1000	29.3
Indian Creek	TN060400011303_2000	10.7
Jack Branch	TN060400011000_0100	2.0
Lick Creek	TN06040001058_1000	10.1
Lick Creek	TN06040001058_2000	3.4
Lick Creek	TN060400011066_1000	20.6
Lick Creek	TN06040001665_1000	28.1
Little Beech Creek	TN060400011163_0100	16.9
Marsh Creek	TN060400011105_1000	17.5
Middleton Creek	TN06040001043_0600	18.5
Mill Creek	TN06040004008_0200	5.2
Owl Creek	TN06040001054_0100	42.1
Piney Creek	TN06040001802_0600	24.8
Right Fork Whites Creek	TN06040001064_0910	13.0
Roan Creek	TN060400011020_1000	23.6
Robinson Creek	TN06040001155_1000	9.9
Rushing Creek	TN06040001809_1000	45.3
Shakerag Branch	TN060400011219_0400	19.3
Snake Creek	TN06040001054_2000	10.7
South Fork Blue Creek	TN060400011000_1000	12.8
Spring Creek	TN060400011085_1000	8.2

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Stewman Creek	TN060400012176_1000	30.1
Sulphur Fork Cub Creek	TN06040001643_0100	44.4
Toms Creek	TN060400011035_1000	34.5
Turkey Creek	TN06040001064_0200	43.2
Turkey Creek	TN06040001802_0100	16.7
Turnbo Creek	TN06040001906_1000	18.2
Unnamed Trib to Horse Creek	TN06040001064_0300	2.4
Unnamed trib to Horse Creek	TN06040001064_0400	1.5
Unnamed trib to Right Fork of Whites Creek	TN06040001064_0911	1.0
Waldrop Creek	TN06040001060_0400	11.0
Weatherford Creek	TN060400011303_0500	48.4
West Prong Doe Creek	TN06040001041_0100	15.3
White Oak Creek	TN06040001043_2000	10.6
Whiteoak Creek	TN060400011147_1000	16.9
Whites Creek	TN06040001064_0900	19.7
Whites Creek	TN06040001840_1000	29.4

Table A3-1a. Streams Fully Supporting Designated Uses in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Beech Creek	TN060400011163_3000	6.2
Chalk Creek	TN06040001043_0100	14.0
Chambers Creek	TN06040001060_2000	4.0
Eagle Creek	TN06040001364_2000	3.9
East Prong Doe Creek	TN06040001041_0200	18.1
Hoover Branch	TN06040001060_0500	4.3
Jack Branch	TN060400011000_0150	1.0
Lick Creek	TN06040001054_0800	20.0
Mud Creek	TN06040001043_0200	13.4
North Fork Blue Creek	TN060400011000_0200	7.4
Snake Creek	TN06040001054_1000	9.3
Stanley Branch	TN06040001054_1100	9.8
Unnamed trib to Little Beech Creek	TN060400011163_0110	5.6
Wardlow Creek	TN06040001060_0300	20.9
White Oak Creek	TN06040001043_1000	15.1

Table A3-1b. Streams Partially Supporting Designated Uses in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Browns Creek	TN06040001802_1150	0.3
Eagle Creek	TN06040001364_3000	5.1
Roberts Creek	TN06040001991_1000	4.4

Table A3-1c. Streams Not Supporting Designated Uses in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Anderson Branch	TN06040001043_0900	3.7
Arms Creek	TN06040001802_1300	18.7
Baker Branch	TN06040001149_0100	6.5
Barbwood Branch	TN060400011704_0100	5.2
Bear Creek	TN060400011303_0510	14.5
Bear Creek	TN06040001802_1500	5.8
Beason Creek	TN06040001118_1000	11.3
Bethel Branch	TN06040001149_0300	2.2
Big Hurricane Creek	TN06040001043_0640	26.1
Bloody Branch	TN060400011219_0200	8.1
Boon Creek	TN06040001064_0220	22.3
Browns Creek	TN06040001802_1100	5.2
Buck Branch	TN06040001840_0100	8.4
Buck Creek	TN060400011105_0100	7.0
Cane Creek	TN06040001643_0300	9.1
Cane Creek	TN06040001802_0400	44.6
Caney Branch	TN06040001054_1200	4.7
Choate Creek	TN06040001064_0240	5.5
Clarey Branch	TN06040001054_0900	4.3
Cody Branch	TN060400012176_0400	2.3
Coon Creek	TN06040001043_0300	6.0
Criner Creek	TN06040001043_0620	6.5
Dare Branch	TN06040001643_0600	7.5
Doe Creek	TN06040001041_1000	10.2
Dollar Creek	TN06040001118_0110	7.5
Dry Branch	TN06040001364_0100	7.3
Dry Branch	TN06040001474_0100	9.6
Dry Creek	TN06040001054_0700	3.9
Dry Creek	TN060400011303_0200	13.4
Dry Creek	TN060400011303_0600	12.4
Dry Creek	TN06040001802_1110	2.9
Duncan Branch	TN06040001991_0100	2.5
English Creek	TN06040001064_0250	16.2
Flat Creek	TN06040001802_0300	27.6
Flat Gap Creek	TN060400011303_0100	16.2
Flats Creek	TN06040001043_0800	10.0
Fulwood Branch	TN06040001054_0200	3.9
Gans Branch	TN06040001906_0200	8.1
Gattis Creek	TN060400011943_1000	10.0
Germany Branch	TN06040001064_0700	8.7
Goff Branch	TN06040001043_0630	3.6
Graham Creek	TN06040001054_0400	12.5
Haggard Branch	TN06040001364_0200	3.9
Haley Creek	TN06040001802_0900	21.2

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Harmon Creek	TN06040001802_0800	11.3
Hatley Creek	TN060400011704_1000	17.5
Hog Creek	TN060400011219_0500	13.6
Horny Head Creek	TN06040001643_0500	6.9
Indian Creek	TN060400011303_3000	9.3
Johnson Creek	TN06040001802_1400	6.0
Kentucky Reservoir misc. tribs.	TN06040001001T_0999	292.7
King Branch	TN06040001149_0200	3.1
Leath Creek	TN06040001060_0600	7.6
Leatherwood Branch	TN060400011163_0300	5.4
Lick Branch	TN06040001064_0100	6.5
Little Creek	TN06040001041_0211	3.0
Little Creek	TN06040001058_0300	5.4
Little Creek	TN06040001906_0100	4.4
Little Cub Creek	TN06040001643_0200	15.9
Little Hurricane Creek	TN06040001043_0810	5.2
Little Lick Creek	TN06040001058_0200	6.6
Little Lick Creek	TN06040001665_0100	13.1
Little Owl Creek	TN06040001054_0120	14.8
Little Snake Creek	TN06040001054_0500	32.7
Little Spring Creek	TN060400011085_0100	4.8
Little Turkey Creek	TN06040001064_0230	10.8
Little White Oak Creek	TN06040001043_0500	19.6
Little Wolf Creek	TN06040001802_0710	7.1
Lost Creek	TN06040001802_0500	13.4
Lost Creek	TN06040001817_1000	10.2
Luton Branch	TN06040001840_0200	5.2
Mayberry Branch	TN060400011122_0300	8.5
Melton Creek	TN06040001043_0400	9.8
Middle Prong Doe Creek	TN06040001041_0210	7.1
Miles Creek	TN06040001043_1100	8.8
Mill Creek	TN060400011219_0600	9.8
Misc tribs to Beech Creek	TN060400011163_0999	23.3
Misc tribs to Beech River	TN06040001802_0999	77.0
Misc tribs to Browns Creek	TN06040001802_1199	19.1
Misc tribs to Chambers Creek	TN06040001060_0999	21.2
Misc tribs to Lick Creek	TN06040001058_0999	38.9
Misc tribs to Middleton Creek	TN06040001043_0699	50.8
Misc. tribs to Cub Creek	TN06040001643_0999	18.9
Misc. tribs to Hardin Creek	TN060400011219_0999	57.8
Misc. tribs to Horse Creek	TN06040001064_0999	80.8
Misc. tribs to Indian Creek	TN060400011303_0999	142.5
Misc. tribs to Snake Creek	TN06040001054_0999	39.1
Misc. tribs to White Oak Creek	TN06040001043_0999	50.1
Morgan Creek	TN06040001474_1000	15.2
Morrison Creek	TN060400011163_0400	9.7

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Mud Creek	TN06040001149_1000	37.9
Murphy Creek	TN060400012176_0100	5.8
Nichols Branch	TN06040001064_0800	6.2
North Fork	TN060400011035_0100	6.5
North Fork Beason Creek	TN06040001118_0200	8.9
North Fork Lick Creek	TN060400011066_0100	15.6
North Fork Mud Creek	TN06040001043_0220	14.4
North Prong Stewman Creek	TN060400012176_0200	9.4
Panther Creek	TN06040001802_0200	6.7
Patterson Branch	TN060400011303_0530	2.4
Pickens Branch	TN06040001064_0500	6.7
Pinhook Branch	TN060400011303_0540	3.3
Pisgah Branch	TN06040001058_0100	6.4
Raccoon Branch	TN06040001041_0120	2.6
Rich Branch	TN060400011303_0520	8.0
Roanoke Creek	TN060400011303_0300	9.8
Rogers Creek	TN06040001064_0600	16.6
Ross Creek	TN060400011199_1000	14.4
Rqyburn Creek	TN060400011303_0400	18.9
Salt River	TN06040001043_0230	7.9
Shiloh Branch	TN06040001054_0110	9.3
Shipman Creek	TN06040001643_0110	4.4
Short Creek	TN060400011209_1000	12.4
Sinking Creek	TN06010204050_1000	5.1
Smith Branch	TN060400011163_0200	4.3
Smith Fork	TN060400011303_0700	27.9
South Fork Beason Creek	TN06040001118_0100	10.4
South Fork Mud Creek	TN06040001043_0210	25.4
South Fork Owl Creek	TN06040001054_0130	5.5
South Fork Toms Creek	TN060400011035_0200	5.0
Steele Creek	TN06040001064_0210	11.9
Sulphur Spring Branch	TN06040001906_0300	4.5
Sulphur Springs Branch	TN06040001054_0600	10.8
Swindle Creek	TN060400011122_0100	8.0
Tanner Branch	TN06040001054_0140	3.2
Threemile Creek	TN06040001043_0610	5.9
Thurman Creek	TN060400012176_0300	5.0
Turner Branch	TN06040001058_0400	4.9
Tyler Branch	TN06040001118_0400	4.4
Unnamed trib to Beason Creek	TN06040001118_0300	8.0
Unnamed Trib to West Prong Doe Creek	TN06040001041_0110	9.8
Unnamed Trib. To Chambers Creek	TN06040001060_0200	5.8
Waterfall Creek	TN060400011303_0210	13.5
Whitlow Branch	TN060400011303_0800	9.9
Willow Creek	TN06040001643_0400	12.4
Wolf Creek	TN06040001802_0700	17.7

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)
Woods Branch	TN060400011122_0200	11.7

Table A3-1d. Streams Not Assessed in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (ACRES)
Kentucky Reservoir	TN06040001001_1000	17,500

Table A3-1e. Lakes Fully Supporting Designated Uses in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (ACRES)
Beech Lake	TN06040001BEECHLK_1000	877
Browns Creek Lake	TN06040001BROWNSCKLK_1000	167
Cedar Lake	TN06040001CEDARLK_1000	142
Cub Creek Reservoir	TN06040001CUBCKRES_1000	66
Dogwood Lake	TN06040001DOGWOODLK_1000	448
Pine Lake	TN06040001PINELK_1000	465
Pin Oak Lake	TN06040001PINOAKLK_1000	663
Redbud Lake	TN06040001REDBUDLK_1000	211
Sycamore Lake	TN06040001SYCAMORELK_1000	224

Table A3-1f. Lakes Not Assessed in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)	SUPPORT DESCRIPTION
Chalk Creek	TN06040001043_0100	14.0	Partial
Chambers Creek	TN06040001060_2000	4.0	Partial
Jack Branch	TN060400011000_0150	1.0	Partial
Lick Creek	TN06040001054_0800	20.0	Partial
Mud Creek	TN06040001043_0200	13.4	Partial
North Fork Blue Creek	TN060400011000_0200	7.4	Partial
Roberts Creek	TN06040001991_1000	4.4	Not supporting
Snake Creek	TN06040001054_1000	9.3	Partial
Stanley Branch	TN06040001054_1100	9.8	Partial
UT to Little Beech Creek	TN060400011163_0110	5.6	Partial
Wardlow Creek	TN06040001060_0300	20.9	Partial
White Oak Creek	TN06040001043_1000	15.1	Partial

Table A3-2a. Stream Impairment Due to Siltation in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)	SUPPORT DESCRIPTION
Chalk Creek	TN06040001043_0100	14.0	Partial
East Prong Doe Creek	TN06040001041_0200	18.1	Partial
Jack Branch	TN060400011000_0150	1.0	Partial
Lick Creek	TN06040001054_0800	20.0	Partial
Mud Creek	TN06040001043_0200	13.4	Partial
North Fork Blue Creek	TN060400011000_0200	7.4	Partial
Roberts Creek	TN06040001991_1000	4.4	Not supporting
Stanley Branch	TN06040001054_1100	9.8	Partial
UT to Little Beech Creek	TN060400011163_0110	5.6	Partial

Table A3-2b. Stream Impairment due to Other Habitat Alterations in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)	SUPPORT DESCRIPTION
Browns Creek	TN06040001802_1150	0.3	Not supporting
Chambers Creek	TN06040001060_2000	4.0	Partial
Eagle Creek	TN06040001364_2000	3.9	Partial
Eagle Creek	TN06040001364_3000	5.1	Not supporting
Mud Creek	TN06040001043_0200	13.4	Partial
Stanley Branch	TN06040001054_1100	9.8	Partial
White Oak Creek	TN06040001043_1000	15.1	Partial

Table A3-2c. Stream Impairment Due to Organic Enrichment / Low Dissolved Oxygen in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

SEGMENT NAME	WATERBODY SEGMENT ID	SEGMENT SIZE (MILES)	SUPPORT DESCRIPTION
Beech Creek	TN060400011163_3000	6.2	Partial

Table A3-2d. Stream Impairment due to PCBs in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

APPENDIX IV

LAND USE/LAND COVER	AREAS IN HUC-10 SUBWATERSHEDS (ACRES)				
	01	02	03	04	05
Bare Rock/Sand/Clay	3				
Deciduous Forest	73,373	35,069	49,948	55,247	84,320
Emergent Herbaceous Wetlands	464	17	54	771	75
Evergreen Forest	12,272	4,934	22,082	9,168	14,513
High Intensity: Commercial/Industrial/Transportation	383	24	235	28	215
High Intensity: Residential	126	12	87	13	8
Low Intensity: Residential	847	136	549	156	87
Mixed Forest	17,337	4,759	21,567	8,118	22,155
Open Water	6,586	518	197	443	326
Other Grasses: Urban/Recreational	103	3	133	1	95
Pasture/Hay	30,064	15,165	13,805	25,057	11,436
Row Crops	43,113	19,026	7,809	17,043	4,836
Transitional	1,326	377	5,479	115	6,591
Woody Wetlands	7,029	1,608	542	6,798	620
Quarries/Strip Mines/Gravel Pits	34		66		51
Total	**193,061**	**81,648**	**122,554**	**122,959**	**145,329**

LAND USE/LAND COVER	AREAS IN HUC-10 SUBWATERSHEDS (ACRES)				
	06	07	08	09	10
Bare Rock/Sand/Clay		8		12	
Deciduous Forest	40,585	112,288	79,864	136,218	34,627
Emergent Herbaceous Wetlands	34	724	649	1,104	97
Evergreen Forest	3,328	4,217	17,171	2,477	2,912
High Intensity: Commercial/Industrial/Transportation	153	232	544	614	79
High Intensity: Residential	31	17	405	15	
Low Intensity: Residential	241	168	1,865	42	16
Mixed Forest	8,276	10,865	16,991	3,753	3,581
Open Water	106	4,737	4,707	8,006	360
Other Grasses: Urban/Recreational	74	128	91	90	
Pasture/Hay	4,289	9,631	42,830	4,554	6,994
Row Crops	1,497	8,191	23,601	8,729	5,349
Transitional	4,057	2,741	483	4,430	236
Woody Wetlands	52	3,422	3,748	6,843	968
Quarries/Strip Mines/Gravel Pits		297	14	52	361
Total	**62,724**	**157,666**	**192,963**	**176,941**	**55,579**

Table A4-1. Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed by HUC-10. *Data are from 1992 Multi-Resolution Land Characterization (MRLC) derived by applying a generalized Anderson Level II system to mosaics of Landsat thematic mapper images collected every five years.*

HYDROLOGIC SOIL GROUPS
GROUP A SOILS have low runoff potential and high infiltration rates even when wet. They consist chiefly of sand and gravel and are well to excessively drained.
GROUP B SOILS have moderate infiltration rates when wet and consist chiefly of soils that are moderately deep to deep, moderately to well drained, and moderately coarse to coarse textures.
GROUP C SOILS have low infiltration rates when wet and consist chiefly of soils having a layer that impedes downward movement of water with moderately fine to fine texture.
GROUP D SOILS have high runoff potential, very low infiltration rates, and consist chiefly of clay soils.

Table A4-2. Hydrologic Soil Groups in Tennessee as Described in WCS.

STATION	HUC-10	AGENCY	STREAM NAME	AREA (SQ MILES)	LOW FLOW (CFS)		
					1Q10	7Q10	3Q20
03593005	0604000101	USGS	Tennessee River				
03593123	0604000101	USGS	Lick Creek				
03593500	0604000101	USGS	Tennessee River	33,140	6,000	10,900	6,220
350354088150801	0604000101	TVA	Tennessee River				
350414088150501	0604000101	TVA	Tennessee River				
03593300	0604000102	USGS	Snake Creek	49.4	0.2	0.3	0.1
03593800	0604000103	USGS	Horse Creek	104	23.7	24.5	21.5
03594000	0604000103	USGS	Horse Creek	114			
03594040	0604000103	USGS	Turkey Creek	53.7	2.8	3.3	2.5
350558088074601	0604000103	TVA	Holland Creek				
351037088123401	0604000103	TVA	Horse Creek				
03594058	0604000104	USGS	White Oak Creek	46.1	0.4	0.6	0.1
03594120	0604000104	USGS	Middleton Creek	45.5	0.5	0.8	0.2
03594160	0604000105	USGS	Indian Creek	201	11	11	8.4
03594200	0604000106	USGS	Eagle Creek	19.0	-	-	0
03594300	0604000107	USGS	Cypress Creek				
03594400	0604000107	USGS	Cypress Creek	16.8	0.86	0.93	0.74
352320087591001	0604000107	TVA	Tennessee River				
03594415	0604000108	USGS	Beech River	15.9	6.6	7.2	6.6
03594425	0604000108	USGS	Pine Tree Branch				
03594430	0604000108	USGS	Harmon Creek	6.87	3.0	3.1	2.9
03594435	0604000108	USGS	Piney Creek	19.2			
03594437	0604000108	USGS	Cane Creek				
03594439	0604000108	USGS	Beech River				
03594445	0604000108	USGS	Beech River	115	19	21	18
03594446	0604000108	USGS	Beech River				
03594450	0604000108	USGS	Browns Creek				
03594455	0604000108	USGS	Cane Creek				
03594460	0604000108	USGS	Cane Creek				
03594465	0604000108	USGS	Beech River				
03594480	0604000108	USGS	Turkey Creek	8.4	0	0	0
03594482	0604000108	USGS	Turkey Creek				

Table A4-3. Historical Streamflow Data Summary Based on Mean Daily Flows in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed*. USGS, United States Geological Survey; TVA, Tennessee valley Authority. Additional information may be found at* http://nwis.waterdata.usgs.gov/tn/nwis/discharge

AGENCY	STATION	ALIAS	LOCATION	HUC-10
NPS	SHIL_NPS_WQ01		Dill Branch	0604000101
NPS	SHIL_NPS_WQ1		Dill Branch	0604000101
NPS	SHIL_NPS_WQ10		Tennessee River	0604000101
NPS	SHIL_NPS_WQ02		Upper Dill Branch	0604000101
NPS	SHIL_NPS_WQ2		Upper Dill Branch	0604000101
TDEC	ECO65I02		Battles Branch @ RM 0.75	0604000101
TDEC	BEASO000.2HD		Beason Creek @ RM 0.2	0604000101
TDEC	BEECH021.9HE	000285	Beech River @ RM 21.9	0604000101
TDEC	CHAMB001.5HD	000470	Chambers Creek @ RM 1.5	0604000101
TDEC	CHAMB000.9HD	000480	Chambers Creek @ RM 0.9	0604000101
TDEC	CHAMB000.5HD	000490	Chambers Creek @ RM 0.5	0604000101
TDEC	CHAMB000.1HD	000500	Chambers Creek @ RM 0.1	0604000101
TDEC	CHAMB018.1MC		Chambers Creek @ RM 18.1	0604000101
TDEC	CHAMB006.2HD		Chambers Creek @ RM 6.2	0604000101
TDEC	HOOVE000.1HD		Hoover Branch @ RM 0.1	0604000101
TDEC	LEATH000.9HD		Leath Creek @ RM 0.9	0604000101
TDEC	LICK002.1HD		Lick Creek @ RM 2.1	0604000101
TDEC	ROBIN003.4HD	ECO65I01	Robinson Creek @ rm 3.4	0604000101
TDEC	ROBIN002.1HD		Robinson Creek @ RM 2.1	0604000101
TDEC	SNAKE002.0HD		Snake Creek @ RM 2.0	0604000101
TDEC	TENNE205.3HD	003370	Tennessee River @ RM 205.3	0604000101
TDEC	TENNE203.8HD	003380	Tennessee River @ RM 203.8	0604000101
TDEC	TENNE203.9HD	003390	Tennessee River @ RM 203.9	0604000101
TDEC	TENNE198.1HD	003400	Tennessee River @ RM 198.1	0604000101
TDEC	TENNE193.4HD	003420	Tennessee River @ RM 193.4	0604000101
TDEC	TENNE190.9HD	003430	Tennessee River @ RM 190.9	0604000101
TDEC	TENNE189.6HD	003440	Tennessee River @ RM 189.6	0604000101
TDEC	TENNE189.9HD	003455	Tennessee River @ RM 189.9	0604000101
TDEC	TENNE189.9HD		Tennessee River @ RM 189.9	0604000101
TDEC	TENNE197.1HD	003412	Tennessee River @ RM 197.1	0604000101
TDEC	ECO65A03		Wardlow Creek	0604000101
TDEC	WARDL002.6MC		Wardlow Creek @ RM 2.6	0604000101
TDEC	WPDOE001.4HD		West Prong Doe Creek @ RM 1.4	0604000101
TDEC	WHITE001.7HD	003805	White Creek @ RM 1.7	0604000101
TVA	476162		Beason Creek @ RM 0.2	0604000101
TVA	476173		Cypress Pond Slough @ RM 0.1	0604000101
TVA	476163		Cypress Pond Slough @ RM 1.5	0604000101
TVA	476202		Doe Creek @ RM 0.10	0604000101
TVA	475696		Dollar Creek @ RM 0.25	0604000101
TVA	475697		Dollar Creek @ RM 1.0	0604000101
TVA	475698		South Fork Beason Creek @ RM 1.5	0604000101
TVA	476101		Tennessee River @ RM 165.0	0604000101
TVA	476102		Tennessee River @ RM 169.0	0604000101

AGENCY	STATION	ALIAS	LOCATION	HUC-10
TVA	476154		Tennessee River @ RM 172.0	0604000101
TVA	475999		Tennessee River @ RM 172.3	0604000101
TVA	475999		Tennessee River @ RM 172.3	0604000101
TVA	477485		Tennessee River @ RM 173.5	0604000101
TVA	477486		Tennessee River @ RM 173.7	0604000101
TVA	476103		Tennessee River @ RM 174.0	0604000101
TVA	476104		Tennessee River @ RM 176.0	0604000101
TVA	476156		Tennessee River @ RM 179.0	0604000101
TVA	477484		Tennessee River @ RM 181.0	0604000101
TVA	476159		Tennessee River @ RM 185.5	0604000101
TVA	475011		Tennessee River @ RM 186.0	0604000101
TVA	475010		Tennessee River @ RM 188.5	0604000101
TVA	476161		Tennessee River @ RM 189.0	0604000101
TVA	475699		Tennessee River @ RM 189.3	0604000101
TVA	475699		Tennessee River @ RM 189.3	0604000101
TVA	476199		Tennessee River @ RM 190.0	0604000101
TVA	475009		Tennessee River @ RM 191.0	0604000101
TVA	477176		Tennessee River @ RM 191.6	0604000101
TVA	475812		Tennessee River @ RM 193.3	0604000101
TVA	476013		Tennessee River @ RM 193.5	0604000101
TVA	477008		Tennessee River @ RM 195.4	0604000101
TVA	476966		Tennessee River @ RM 196.8	0604000101
TVA	476967		Tennessee River @ RM 197.0	0604000101
TVA	477002		Tennessee River @ RM 197.5	0604000101
TVA	477338		Tennessee River @ RM 200.0	0604000101
TVA	475008		Tennessee River @ RM 201.0	0604000101
TVA	477018		Tennessee River @ RM 201.3	0604000101
TVA	476968		Tennessee River @ RM 201.8	0604000101
TVA	475565		Tennessee River @ RM 202.2	0604000101
TVA	476969		Tennessee River @ RM 202.5	0604000101
TVA	475813		Tennessee River @ RM 203.0	0604000101
TVA	475564		Tennessee River @ RM 203.4	0604000101
TVA	475007		Tennessee River @ RM 204.0	0604000101
TVA	475563		Tennessee River @ RM 204.4	0604000101
TVA	475562		Tennessee River @ RM 204.9	0604000101
TVA	475814		Tennessee River @ RM 205.0	0604000101
TVA	475006		Tennessee River @ RM 205.1	0604000101
TVA	475561		Tennessee River @ RM 205.3	0604000101
TVA	475005		Tennessee River @ RM 205.4	0604000101
TVA	475004		Tennessee River @ RM 205.6	0604000101
TVA	475003		Tennessee River @ RM 205.7	0604000101
TVA	475560		Tennessee River @ RM 205.8	0604000101
TVA	475559		Tennessee River @ RM 206.4	0604000101
TVA	476166		Wilkinson Pond Slough @ RM 0.1	0604000101

AGENCY	STATION	ALIAS	LOCATION	HUC-10
USEPA	210415		Kentucky Lake	0604000101
USEPA	210416		Kentucky Lake	0604000101
USEPA	0109J1		Public Fishing Platform By End Of Dam	0604000101
USEPA	71		Tennessee River At Savannah	0604000101
NPS	SHIL_NF_BP		Bloody Pond	0604000102
NPS	SHIL_NPS_WQ09		Bloody Pond	0604000102
NPS	SHIL_NF_OC		Owl Creek	0604000102
NPS	SHIL_NPS_WQ07		Owl Creek	0604000102
NPS	SHIL_NPS_WQ7		Owl Creek	0604000102
NPS	SHIL_NPS_WQ04		Shiloh Branch	0604000102
NPS	SHIL_NPS_WQ4		Shiloh Branch	0604000102
NPS	SHIL_NPS_WQ03		Tilghman (Glover) Branch	0604000102
NPS	SHIL_NPS_WQ3		Tilghman (Glover) Branch	0604000102
TDEC	CLEAR002.7MC		Clear Creek @ RM 2.7	0604000102
TDEC	OWL003.8HD		Owl Creek @ RM 3.8	0604000102
TDEC	SNAKE008.0MC		Snake Creek @ RM 8.0	0604000102
TDEC	SNAKE009.8MC		Snake Creek @ RM 9.8	0604000102
TDEC	STANL001.0MC		Stanley Creek @ RM 1.0	0604000102
TDEC	HOLLA000.4HD		Holland Creek @ RM 0.4	0604000103
TDEC	HORSE012.6HD	001675	Horse Creek @ RM 12.6	0604000103
TDEC	HORSE005.2HD	001676	Horse Creek @ RM 5.2	0604000103
TDEC	RFWHIT003.6HD	ECO65J06	Right Fork Whites Creek @ RM 3.38	0604000103
TDEC	ECO65J11	RFWHIT0.1HD	UT To Right Fork Whites Creek	0604000103
TVA	476165		Horse Creek @ RM 0.1	0604000103
TVA	111173		Pickwick Landing @ RM 0.0	0604000103
TVA	111168		Pickwick Landing A-B-C-D	0604000103
TVA	111169		Pickwick Landing E-F	0604000103
TVA	111174		Pickwick Landing P	0604000103
TVA	111196		Sactillo	0604000103
TVA	111197		Savannah	0604000103
TDEC	BINGH001.0HD		Bingham Creek @ RM 1.0	0604000104
TDEC	CHALK001.3HD		Chalk Creek @ RM 1.3	0604000104
TDEC	HURRI002.6HD		Hurricane Creek @ RM 2.6	0604000104
TDEC	MIDDL002.1HD		Middleton Creek @ RM 2.1	0604000104
TDEC	MIDDL002.5HD		Middleton Creek @ RM 2.5	0604000104
TDEC	MIDDL003.5HD		Middleton Creek @ RM 3.5	0604000104
TDEC	MUD001.0HD		Mud Creek @ RM 1.0	0604000104
TDEC	WOAK017.0MC		White Oak Creek @ RM 17.0	0604000104
TDEC	WOAK002.0HD		White Oak Creek @ RM 2.0	0604000104
TVA	476164		Chalk Creek @ RM 4.0	0604000104
TVA	475012		Tennessee River @ RM 173.0	0604000104
TVA	476105		White Oak Creek @ RM 0.1	0604000104
TVA	477487		White Oak Creek @ RM 0.1	0604000104
TDEC	INDIA016.4HD		Indian Creek @ RM 16.4	0604000105

AGENCY	STATION	ALIAS	LOCATION	HUC-10
TDEC	INDIA026.3WE		Indian Creek @ RM 26.3	0604000105
TDEC	INDIA003.8HD		Indian Creek @ RM 3.8	0604000105
TDEC	INDIA004.0HD	001700	Indian Creek @ RM 4.0	0604000105
TDEC	WEATH002.5WE		Weatherford Creek @ RM 2.5	0604000105
TVA	476167		Indian Creek @ RM 4.0	0604000105
TVA	476155		Tennessee River @ RM 174.5	0604000105
TVA	476201		Tennessee River @ RM 175.0	0604000105
TDEC	HARDI004.6HD		Hardin Creek @ RM 4.6	0604000106
TDEC	HARDI013.9WE		Hardin Creek @ RM 13.9	0604000106
TDEC	TISSUE03		Beech Creek @ RM 1.6	0604000107
TDEC	BEECHCRIS03		Beech Creek @ RM 10.7	0604000107
TDEC	BEECHCRIS02		Beech Creek @ RM 14.2	0604000107
TDEC	BEECHCRIS01		Beech Creek @ RM 15.2	0604000107
TDEC	BEECHCRIS04		Beech Creek @ RM 8.6	0604000107
TDEC	BEECH008.8WE		Beech River @ RM 8.8	0604000107
TDEC	3450		Tennessee River	0604000107
TDEC	TENNE155.0WE	TISSUE06	Tennessee River @ RM 155.0	0604000107
TDEC	TENNE158.0HD	003449	Tennessee River 158.0	0604000107
TVA	475839		Clifton Tennessee	0604000107
TVA	476017		Clifton WTP Intake	0604000107
TVA	475013		Kentucky Reservoir	0604000107
TVA	475405		Kentucky Reservoir	0604000107
TVA	475811		Kentucky Reservoir	0604000107
TVA	476100		Kentucky Reservoir	0604000107
TVA	476150		Kentucky Reservoir	0604000107
TVA	476152		Kentucky Reservoir	0604000107
TVA	476153		Kentucky Reservoir	0604000107
TVA	476205		Ross Creek @ RM 0.10	0604000107
TVA	476204		Tennessee River @ RM 160.0	0604000107
TVA	476965		Tennessee River 153.4	0604000107
TVA	476170		UT To Tennessee River @ RM 148.80	0604000107
TVA	476169		UT To Tennessee River @ RM 150.0	0604000107
TVA	476168		UT To Tennessee River @ RM 155.1	0604000107
TVA	476206		UtTTo Tennessee River @ RM 144.3	0604000107
TVA	476171		Whiteoak Creek @ RM 0.1	0604000107
USEPA	470210D			0604000107
USEPA	470210O			0604000107
USEPA	210414		Kentucky Lake	0604000107
EPA	210471		Bear Creek/Beech Creek	0604000108
TDEC	BEECH006.9DE	BEECH010.0	Beech River @ RM 10.0	0604000108
TDEC	BEECH018.5HE		Beech River @ RM 18.5	0604000108
TDEC	BEECH018.9HE		Beech River @ RM 18.9	0604000108
TDEC	BEECH022.2HE		Beech River @ RM 22.2	0604000108
TDEC	BEECH031.9HE		Beech River @ RM 31.9	0604000108

AGENCY	STATION	ALIAS	LOCATION	HUC-10
TDEC	BEECH034.0HE	BEECH034.0	Beech River @ RM 34.0	0604000108
TDEC	BROWN004.7HE		Brown Creek @ RM 4.7	0604000108
TDEC	BROWN001.4HE		Brown's Creek @ RM 1.4	0604000108
TDEC	BROWNSCREEK		Browns Creek Lake	0604000108
TDEC	DRY000.9HE		Dry Creek @ RM 0.9	0604000108
TDEC	PINOAK02		Pin Oak Lake at Browns Creek	0604000108
TDEC	PINOAK01		Pin Oak Lake at Dam	0604000108
TDEC	RUSH002.7DE	002365	Rushing Creek @ RM 2.7	0604000108
TDEC	RUSHI002.8DE		Rushing Creek @ RM 2.8	0604000108
TVA	BEECH			0604000108
TVA	475875		Beech River @ RM 0.5	0604000108
TVA	477663		Beech River @ RM 10.0	0604000108
TVA	476053		Beech River @ RM 21.6	0604000108
TVA	475019		Beech River @ RM 24.28	0604000108
TVA	476373		Beech River @ RM 25.3	0604000108
TVA	475020		Beech River @ RM 29.84	0604000108
TVA	475021		Beech River @ RM 32.15	0604000108
TVA	475022		Beech River @ RM 34.17	0604000108
TVA	475180		Beech River @ RM 34.80	0604000108
TVA	475024		Beech River @ RM 34.97	0604000108
TVA	477179		Beech River @ RM 35.3	0604000108
TVA	475876		Beech River @ RM 36.0	0604000108
TVA	475229		Beech River @ RM 37.0	0604000108
TVA	475877		Beech River @ RM 38.5	0604000108
TVA	477185		Big Creek @ RM 5.95	0604000108
TVA	476230		Big Creek @ RM 6.7	0604000108
TVA	475147		Black Bottom Creek @ RM 0.50	0604000108
TVA	476351		Brazil Branch @ RM 0.30	0604000108
TVA	476228		Browns Creek @ RM 5.1	0604000108
TVA	477183		Browns Creek @ RM 5.2	0604000108
TVA	477252		Browns Creek @ RM 8.7	0604000108
TVA	476231		Dry Branch @ RM 1.1	0604000108
TVA	477181		Dry Branch @ RM 1.1	0604000108
TVA	476227		Dry Creek @ RM 1.0	0604000108
TVA	477184		Dry Creek @ RM 1.05	0604000108
TVA	476229		Haley Creek @ RM 4.0	0604000108
TVA	477182		Haley Creek @ RM 4.0	0604000108
TVA	476353		Harmon Creek @ RM 1.2	0604000108
TVA	476354		Owl Creek @ RM 1.1	0604000108
TVA	111194		Perryville No.1	0604000108
TVA	476352		Piney Creek @ RM 1.5	0604000108
TVA	476232		Piney Creek @ RM 4.8	0604000108
TVA	477180		Piney Creek @ RM 5.25	0604000108
TVA	476355		Poorhouse Branch @ RM 0.25	0604000108

AGENCY	STATION	ALIAS	LOCATION	HUC-10
TVA	476350		Wolf Creek @ RM 0.25	0604000108
TDEC	EAGLE012.5BN		Eagle Creek @ RM 12.5	0604000109
TDEC	EAGLE013.1BN		Eagle Creek @ RM 13.1	0604000109
TDEC	EAGLE004.1BN		Eagle Creek @ RM 4.1	0604000109
TDEC	LICK001.9PE		Lick Creek @ RM 1.9	0604000109
TDEC	SPRIN002.1PE		Spring Creek @ RM 2.1	0604000109
TDEC	TENNE134.9PE	003460	Tennessee River @ RM 134.9	0604000109
TDEC	TENNE111.2HU	003480	Tennessee River @ RM 111.2	0604000109
TDEC	TENNE134.9PE	003460	Tennessee River @ RM 134.9	0604000109
TDEC	BEECH000.0HE	000286	Beech River @ RM 0.0	0604000109
TVA	476207		Beech River @ RM 0.10	0604000109
TVA	475015		Tennessee River @ RM 112.0	0604000109
TVA	476208		Tennessee River @ RM 130.0	0604000109
TVA	477344		Tennessee River @ RM 135.0	0604000109
TVA	477001		Tennessee River @ RM 135.6	0604000109
TVA	475014		Tennessee River @ RM 136.0	0604000109
USEPA	210412		Kentucky Lake	0604000109
USEPA	210413		Kentucky Lake	0604000109
TDEC	CUBLAKE		Cub Creek Lake At Dam	0604000110
TVA	477253		Cub Creel Lake At Beech River	0604000110

Table A4-4. STORET Water Quality Monitoring Stations in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed*. RM, River Mile; TDEC, Tennessee Department of Environment and Conservation; USEPA, United States Environmental Protection Agency; TVA, Tennessee Valley Authority; NPS, National Park Service. UT, Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	SIC	SIC NAME	MADI	WATERBODY	HUC-10
TN0054976	Scotts Hill School	4952	Sewerage System	Minor	East Prong Doe Creek @ RM 7.7	0604000101
TN0074870	Pickwick landing State Park Waste Water Treatment Facility	4952	Sewerage System	Minor	Tennessee River @ RM 206.4	0604000101
TN0002232	Packaging Corporation of America	2611	Pulp Mills	Major	Tennessee River @ RM 205.4	0604000101
TN0067628	Maverick Tube Corporation	3317	Steel Pipes and Tubes	Minor	Ditch to Battle Branch @ RM 2.2 to Chambers Creek @ RM 5.5	0604000101
TN0064785	Adamsville STP	4952	Sewerage System	Minor	Snake Creek @ RM 8.0	0604000102
TN0077674	HMA Contractors-Adamsville Asphalt Plant	2951	Asphalt Paving	Minor	WWC to Settling Pond #5 to Snake Creek @ RM 8.0	0604000102
TN0061565	Savannah STP	4952	Sewerage System	Major	Horse Creek @ RM 7.8	0604000103
TN0055018	Sardis Community Center	4952	Sewerage System	Minor	Little Hurricane Creek @ RM 7.7	0604000104
TN0067423	Clifton STP #2	4952	Sewerage System	Minor	Tennessee River @ RM 157.2	0604000107
TN0061727	Parsons STP	4952	Sewerage System	Minor	Beech River @ RM 5.8	0604000108
TN0022985	Decaturville STP	4952	Sewerage System	Minor	Rushing Creek @ RM 5.5	0604000108
TN0028916	Scotts Hill Apparel	4952	Sewerage System	Minor	UT @ RM 0.2 to Flat Creek @ RM 6.1	0604000108
TN0055000	Pin Oak School	4952	Sewerage System	Minor	UT @ RM 0.1 to UT @ RM 1.4 to Browns Creek @ RM 0.3	0604000108
TN0024341	Lexington-East Lagoon	4952	Sewerage System	Major	Beech River @ RM 29.7	0604000108
TN0054984	South haven School	4952	Sewerage System	Minor	UT @ RM 1.3 to Wolf Creek @ RM 4.7	0604000108
TN0078042	Benton-Decatur Special Sewer District	4952	Sewerage System	Minor	Tennessee River @ RM 106.3	0604000109
TN0059391	North Forty Truck Stop	5541	Machine Tools	Minor	Eagle Creek @ RM 12.1	0604000109
TN0040878	Pecan Shoppe of Camden	4952	Sewerage System	Minor	Eagle Creek @ RM 13.3	0604000109

Table A4-5. NPDES Permittees in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *RM, River Mile; SIC, Standard Industrial Classification; MADI, Major Discharge Indicator; UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

FACILITY NUMBER	PERMITEE	COUNTY	LIVESTOCK	WATERBODY	HUC-10
TNA000042	Plunk Farm	McNairy	Poultry	UT to Cleat Creek	0604000102

Table A4-6. CAFO Sites in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *UT, Unnamed Tributary.*

FACILITY NUMBER	PERMITEE	SIC	SIC NAME	WATERBODY	HUC-10
TN0070751	APAC Mississippi (Crump Gravel Pit)	1442	Construction Sand and Gravel	UT to Gattis Creek	0604000101
TN0070769	Gibbs Construction (Sand and Gravel Mine)	1442	Construction Sand and Gravel	UT to Beason Creek	0604000101
TN0072206	Gibbs Construction (Gravel Pit #2)	1442	Construction Sand and Gravel	UT to North Fork Beason Creek	0604000101
TN0071790	Standard Construction Co. (Hardin County Pit)	1442	Construction Sand and Gravel	UT to Hoover Creek	0604000101
TN0072681	Trico Construction Materials (Childers Hill Facility)	1442	Construction Sand and Gravel	UT(s) to Lick Creek	0604000101
TN0071447	Martin Marietta Materials (Mine #2-Adamsville)	1442	Construction Sand and Gravel	Burks Branch and Drainways to Owl Creek	0604000102
TN0071293	Standard Construction Co. (McNairy County Pit)	1442	Construction Sand and Gravel	Garrison Branch and UT to Garrison Branch	0604000102
TN0071731	Johnson Gravel Pit	1442	Construction Sand and Gravel	Atkisson Branch and Carroll Hollow to Holland Creek	0604000103
TN0003085	Vulcan Construction Materials (Savannah Quarry)	1442	Construction Sand and Gravel	Steele Creek	0604000103
TN0072591	Wayne County Rock (Site #1)	1442	Construction Sand and Gravel	Gunn Hollow Branch	0604000106
TN0072087	3D Rock Company (Mine #001)	1442	Construction Sand and Gravel	Cypress Creek	0604000107
TN0072711	Duggin Construction Co. (Chaney Road Site)	1442	Construction Sand and Gravel	Drainway to Rock Spring Branch	0604000107
TN0069051	Perry/Decatur Gravel Co. (Chert Gravel Mine)	1442	Construction Sand and Gravel	Sutton Hollow to Cypress Creek	0604000107
TN0079251	Rocky Pointe Rock (Site #1)	1442	Construction Sand and Gravel	UT to Ross Creek	0604000107
TN0071960	Vulcan Construction Materials (Clifton Quarry)	1442	Construction Sand and Gravel	UT to Beech Creek, Tennessee River, and UT to Tennessee River	0604000107
TN0066656	Workman Materials, Inc. (Pope Quarry)	1442	Construction Sand and Gravel	UT to Cypress Creek	0604000107
TN0076392	Almar Rock (Birdsong Mine)	1442	Construction Sand and Gravel	UT to Kentucky Lake	0604000109
TN0072141	Volunteer Rock, Inc. (Charlie Dougherty Road Pit)	1442	Construction Sand and Gravel	UT to Lick Creek	0604000109
TN0072435	Volunteer Rock-Mine #2	1442	Construction Sand and Gravel	UT to Lick Creek	0604000109
TN0027782	Vulcan Construction Materials (Parsons Quarry)	1442	Construction Sand and Gravel	UT to Short Creek and UT to Dirty Creek	0604000110
TN0066389	Vulcan Construction Materials (Decatur County Quarry)	1442	Construction Sand and Gravel	Jordan Spring Branch	0604000110
TN0068900	West Tennessee Gravel Company (Jeannette Pit)	1442	Construction Sand and Gravel	Booty Branch	0604000110

Table A4-7. Active Permitted Mining Sites in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *SIC, Standard Industrial Classification; Unnamed Tributary.*

FACILITY NUMBER	FACILITY NAME	WATERBODY	HUC-10
TN0074616	Town of Sardis WTP	UT to West Prong Doe Creek	0604000101
TN0042072	Hardin County Board of Utilities STP	Little River	0604000101
TN0060160	Parsons WTP	Beech River @ RM 7.0	0604000108
TN0074390	North Utility District of Decatur and Benton Counties	WWC to Cub Creek @ RM 129.5	0604000110

Table A4-8. Water Treatment Plants in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *RM, River Mile; UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

FACILITY NUMBER	FACILITY NAME	WATERBODY	HUC-10
TNG110181	River City Concrete	WWC to Lick Branch	0604000103
TNG110136	Southern Concrete	UT to Beech River	0604000108
TNG110036	Mid-South Ready-Mix	WWC to Turkey Creek to Beech River	0604000108

Table A4-9. Ready Mix Concrete Plants in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *UT, Unnamed Tributary; WWC, Wet Weather Conveyance.*

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-10
NRS03.278	Hardin	Experimental Dredging and Mussel Relocation	Tennessee River	0604000101
NRS02.440	Decatur	Rip-Rap	Stewmans Creek and Tennessee River	0604000101
NRS02.247	Hardin	Maintenance of Pickwick Auxiliary Lock	Tennessee River	0604000101
NRS02.340	Henderson	Bridge and Approaches	West Prong Doe Creek	0604000101
NRS02.218	Hardin	RC Bridge	Beason Creek	0604000101
NRS02.110	Hardin	Dredging and Experimental Mussel Relocation	Tennessee River	0604000101
NRS04.038	Hardin	Bridge Construction	Dill Branch and Tilghman Branch	0604000101
NRS02.380	McNairy	Bridge and Approaches	Lick Creek	0604000101
NRS01.348	Hardin	Repair Concrete Box Culvert	Shiloh Branch	0604000102
NRS02.347	McNairy	Bridge and Approaches	Little Owl Creek	0604000102
NRS02.310	Hardin	Stream Bank Stabilization	Horse Creek	0604000103
NRS03.178	Hardin	Stream Bank Stabilization	English Creek, Rogers Creek, Steele Creek, Little Turkey Creek, Smith's Fork Creek	0604000103
NRS02.053	Hardin	Rip-Rap	Horse Creek	0604000103
NRS01.411	Hardin	Bridge Scour Repair	Horse Creek	0604000103
NRS03.333E	Hardin	Channel Relocation	Bigbie Branch	0604000105
NRS03.333F	Hardin	Channel Relocation	Indian Creek	0604000105
NRS03.333G	Hardin	Channel Relocation	Panther Branch	0604000105
NRS03.333	Hardin	Channel Relocation	Panther Branch	0604000105
NRS03.333H	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333C	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333B	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333I	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333D	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333K	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333J	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333M	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS03.333L	Hardin	Channel Relocation	Flat Gap Creek	0604000105
NRS.02.032	Hardin	Rip-Rap	Indian Creek	0604000105
NRS04.012C	Wayne	Emergency Watershed Protection	Eagle Creek	0604000106
NRS02.304	Henderson	Bridge Repair	Brown Creek	0604000106
NRS01.006	Decatur	Concrete Boat Landing Ramp	Tennessee River	0604000107
NRS02.355	Decatur		Tennessee River	0604000107
NRS02.358	Decatur	Excavation and Stabilization	Tennessee River	0604000107
NRS02.111	Hardin	Maintenance Activity	Tennessee River	0604000107

LOG NUMBER	COUNTY	DESCRIPTION	WATERBODY	HUC-10
NRS03.384B	Henderson	SR-114 Bridge and Approaches	Wetland to Beech River	0604000108
NRS03.384	Henderson	SR-114 Bridge and Approaches	Beech River	0604000108
NRS03.384C	Henderson	SR-114 Bridge and Approaches	Wetland to Beech River	0604000108
NRS03.384D	Henderson	SR-114 Bridge and Approaches	Wetland to Beech River	0604000108
NRS03.384E	Henderson	SR-114 Bridge and Approaches	Wetland to Beech River	0604000108
NRS02.325	Decatur	Sediment Removal	Beech River	0604000108
NRS02.313	Henderson		UT(s) to Big Creek and Roberts Branch	0604000108
NRS02.305	Decatur	Bridge Repair	Rushing Creek	0604000108
NRS02.343	Henderson	Bridge and Approaches	Wolf Creek	0604000108
NRS02.405	Perry	Dredging Boat Access Channel	Tennessee River	0604000109
NRS02.091	Perry	Dredging for Boat Well	Tennessee River	0604000109
NRS00.108	Chester	Water Withdrawal (Irrigation)	Middleton Creek	0604000109

Table A4-10. Individual ARAP Permits Issued January 2000 Through June 2004 in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *UT, Unnamed Tributary; RC, Reinforced Concrete.*

FACILITY NUMBER	FACILITY NAME	SECTOR	RECEIVING STREAM	AREA*	HUC-10
TNR052093	Packaging Corporation of America	L	Chambers Creek @ RM5.5	38	0604000101
TNR052038	Decatur County Landfill	L	UT to Buck Branch	220	0604000101
TNR054331	Savannah Machine Shop	AB	Savannah Storm Sewer	3	0604000101
TNR050417	Packaging Corporation of America	B	Chambers Creek @ RM 3.5 and Robinson Creek @ RM2.0	35	0604000101
TNR056394	Auto Tech and Salvage	M	Barbwood Branch	5	0604000101
TNR054321	Morning Star Manufacturing	Y, AA, P	Beason Creek	20	0604000101
TNR050224	Praxis Companies	Y	Tennessee River	15	0604000101
TNR060668	Aqua Glass Corporation	Y, L, P	UT to Stanley Creek, Dollar Creek	60.5	0604000101
TNR056194	Lambert's Used Cars	M	UT to Owl Creek	6	0604000102
TNR055948	Walnut Grove Cycles	M	Holland Creek	0.9	0604000103
TNR051961	Dement Construction Company	D	Steele Creek, UT to Steele Creek	5	0604000103
TNR054368	Roach Sawmill and Lumber Company	A	Turkey Creek	14.9	0604000103
TNR053207	Clayton Homes	A	Horse Creek	17	0604000103
TNR053091	Savannah Hardin County Airport	S	Horse Creek	0.5	0604000103
TNR056351	Art's Auto Salvage	M	UT to Horse Creek	1	0604000103
TNR053939	Williams Cabinet Shop	W	UT to Barnhill Branch	4.55	0604000103
TNR055075	B&B Sawmill	A	Tennessee River	13	0604000104
TNR050631	Highland Rim Hardwoods	A	Dry Creek	9.4	0604000105
TNR050513	Olive Hill Lumber Company	A	Indian Creek	8	0604000105
TNR055083	Bluegrass Cooperage	A	Hardin Creek	91.96	0604000106
TNR054158	Bell's Welding and Machine	AB	UT to Caney Branch	1	0604000108
TNR050183	McCall Refrigeration	AB	Bear Creek	20.3	0604000108

FACILITY NUMBER	FACILITY NAME	SECTOR	RECEIVING STREAM	AREA*	HUC-10
TNR050184	Kolpak RDI Plant	AB	Bear Creek	15	0604000108
TNR053308	Scott Gibson Field	S	Beech River	0.5	0604000108
TNR050350	Volvo Penta of the Americas	AB	Graves Creek	10	0604000108
TNR050527	Emerson Electric Company	AC	One Mile Branch	29	0604000108
TNR050472	Young Touchstone	AB	Graves Branch	50	0604000108
TNR050907	Johnson Controls	AB	Beech River	22.5	0604000108
TNR051558	Panoply Pallet Plant #2	A	UT to Beech River	2.09	0604000108
TNR050459	Dayco Products	Y	Grants Branch	10.8	0604000108
TNR053291	Franklin-Wilkins Airport	S	Owl Creek	0.5	0604000108
TNR050757	Panoply Corporation	A	UT to Beech River	1.5	0604000108
TNR054595	Harding Machine	AA	Beech River	22.8	0604000108
TNR053810	Grimes Recycling	N	Unidentified	5	0604000108
TNR050173	Columbus McKinnon Corporation	AA	Wolf Creek and Beech River	22	0604000108
TNR054022	Manufacturers Industrial Group	AA	Wolf Creek	2.4	0604000108
TNR053793	DeWaynes's Quality Metal Coatings	F, AA	Graves Branch	3.5	0604000108
TNR054401	H and H Specialty Coatings	AA	Metropolitan Storm Sewer	0.3	0604000109
TNR054443	Walley-Mo Trailers	AB, AA	Eagle Creek	4	0604000109
TNR053272	APAC-Parsons Plant	D	Short and Dirty Creek	3	0604000110
TNR050181	Kolpak Walk-In Division	AB	Daily Hollow	4.9	0604000110
TNR054325	Daws Manufacturing Corporation	AB	UT to Shipman Creek	1.9	0604000110

Table A4-11. Active Permitted TMSP Facilities in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Area, acres of property associated with industrial activity; UT, Unnamed Tributary. Sector details may be found in Table A4-13.*

SECTOR	TMSP SECTOR NAME
A	Timber Products Facilities
AA	Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware
AB	Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery
AC	Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods
AD	Facilities That Are Not Covered Under Sectors A Thru AC (Monitoring Required)
AE	Facilities That Are Not Covered Under Sectors A Thru AC (Monitoring Not Required)
B	Paper and Allied Products Manufacturing Facilities
C	Chemical and Allied Products Manufacturing Facilities
D	Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities
E	Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities
F	Primary Metals Facilities
G	Metal Mines (Ore Mining and Dressing) (RESERVED)
H	Inactive Coal Mines and Inactive Coal Mining-Related Facilities
I	Oil or Gas Extraction Facilities
J	Construction Sand and Gravel Mining and Processing and Dimension Stone Mining and Quarrying Facilities
K	Hazardous Waste Treatment Storage or Disposal Facilities
L	Landfills and Land Application Sites
M	Automobile Salvage Yards
N	Scrap Recycling and Waste and Recycling Facilities
O	Steam Electric Power Generating Facilities
P	Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities
Q	Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities
R	Ship or Boat Building and Repair Yards
S	Vehicle Maintenance Areas, Equipment Cleaning Areas or From Airport Deicing Operations located at Air Transportation Facilities
T	Wastewater Treatment Works
U	Food and Kindred Products Facilities
V	Textile Mills, Apparel and other Fabric Product Manufacturing Facilities
W	Furniture and Fixture Manufacturing Facilities
X	Printing and Platemaking Facilities
Y	Rubber and Miscellaneous Plastic Product Manufacturing Facilities
Z	Leather Tanning and Finishing Facilities

Table A4-12. TMSP Sectors and Descriptions.

APPENDIX V

CONSERVATION PRACTICE	AMOUNT	
	FEET	ACRES
Alley Cropping		
Contour Buffer Strips		
Crosswind Trap Strips		
Field Borders		
Filter Strips		10
Grassed Waterways		
Hedgerow Plantings		
Herbaceous Wind Barriers		
Riparian Forest Buffers		147
Streambank and Shoreline Protection	200	
Windbreaks and Shelterbelts		
Total Conservation Buffers	**200**	**157**

Table A5-1a. Conservation Buffers Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from Performance & Results Measurement System (PRMS) for October 1, 2003 through September 30, 2004 reporting period.*

NUTRIENT MANAGEMENT PLANS APPLIED	ACRES
Feed Management	0
Irrigation Management	0
Water Management	0
Nutrient Management	3,841
Waste Utilization	0

Table A5-1b. Nutrient Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period.*

PARAMETER	FEET	NUMBER
Pipeline	1,000	
Pond		
Spring Development		
Watering Facility		1

Table A5-1c. Water Supply Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period.*

CONSERVATION PRACTICE	NUMBER
Grade Stabilization Structure	1

Table A5-1d. Water Detention/Retention Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period.*

PARAMETER	ACRES
Acres of Pest Management Systems Applied	3,497

Table A5-1e. Pest Management Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period.*

CONSERVATION PRACTICE	AMOUNT	
	Feet	**Acres**
Fence	19,885	
Firebreak		
Forest Harvest Management		331
Heavy Use Area Protection		
Pasture and Hay Planting		453
Prescribed Grazing		285
Range Planting		
Use Exclusion		562
Pipeline	1,000	
Prescribed Burning		
Total	**20,885**	**1,631**

Table A5-1f. Grazing/Forages Conservation Practices in Partnership with NRCS in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Data are from PRMS for October 1, 2003 through September 30, 2004 reporting period.*

COMMUNITY	PROJECT DESCRIPTION	AWARD DATE	AWARD AMOUNT
Benton-Decatur	Wastewater Treatment Plant and Collection System	06/29/2004	$1,200,000
Clifton	Wastewater Treatment Plant Improvements	03/25/1991	$766,452
Collinwood	New Sewage Collection System, Lagoon, and Sprayfield	06/18/1993	$1,364,109
Collinwood	Phase II of Sewer System and Pumping Stations	03/27/1995	$920,000

Table A5-2. Communities in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed Receiving SRF Grants or Loans.

PRACTICE	NRCS CODE	NUMBER OF BMPs
Critical Area Planting	342	1
Diversion	362	3
Fence	382	3
Grade Stabilization Structure	410	8
Grassed Waterway	412	3
Heavy Use Area	561	37
Pasture/Hay Planting	512	165
Pipeline	516	13
Pond	378	11
Riparian Forest Buffer	391	1
Spring Development	574	1
Stream Crossing	578	1
Streambank Protection	580	40
Upland Wildlife Habitat Management	645	4
Waste Management System	312	1
Water/Sediment Control Basin	638	3
Watering Facility	614	14

Table A5-3. Best Management Practices Installed by Tennessee Department of Agriculture and Partners in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.