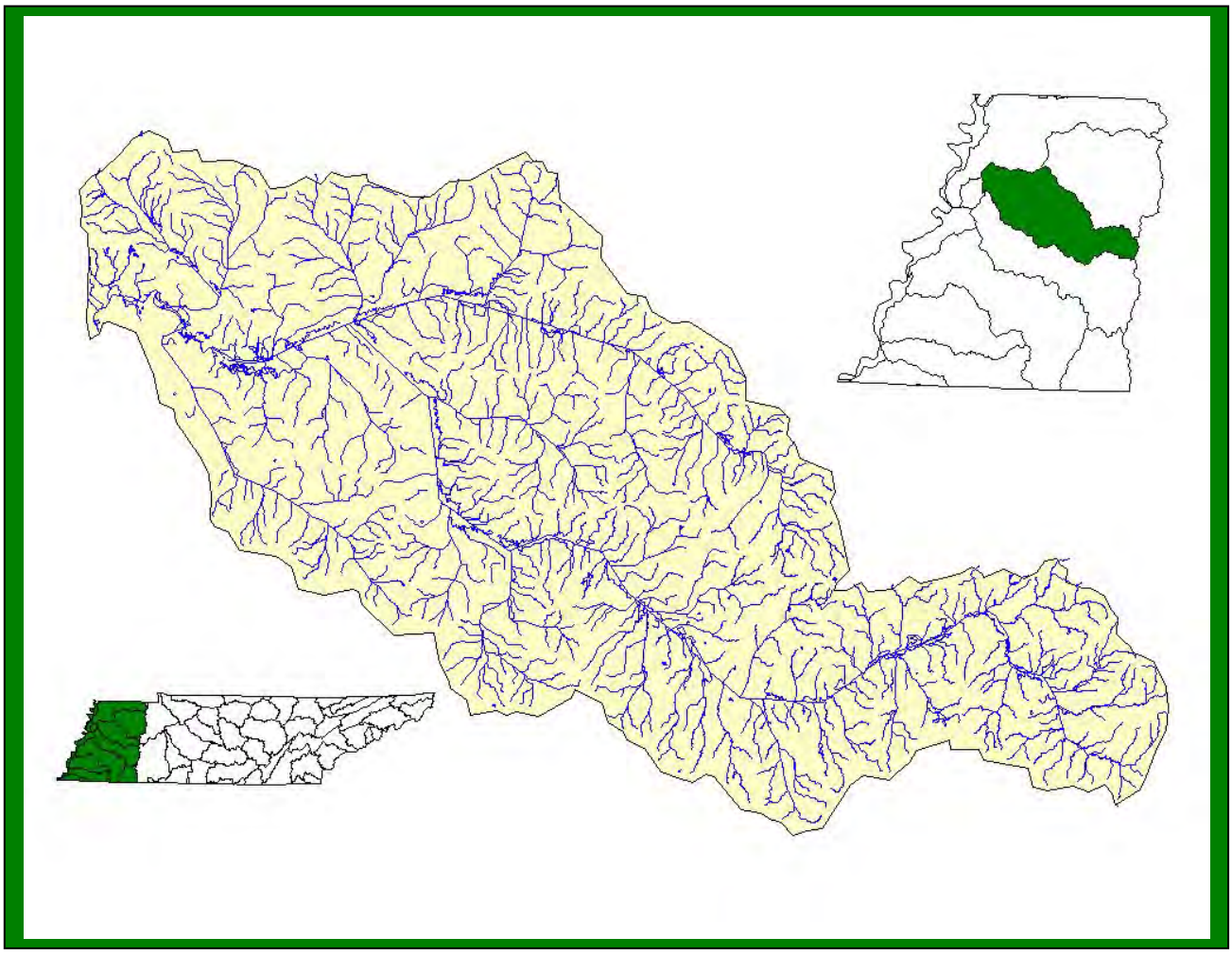
# NORTH FORK FORKED DEER RIVER WATERSHED (08010204)

# OF THE MISSISSIPPI RIVER BASIN

# WATERSHED WATER QUALITY MANAGEMENT PLAN



**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**DIVISION OF WATER POLLUTION CONTROL**
**WATERSHED MANAGEMENT SECTION**
2003

# 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

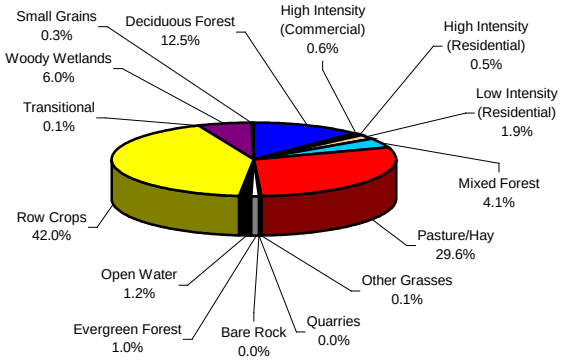
# Summary – North Fork Forked Deer River

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 North Fork Forked Deer 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.

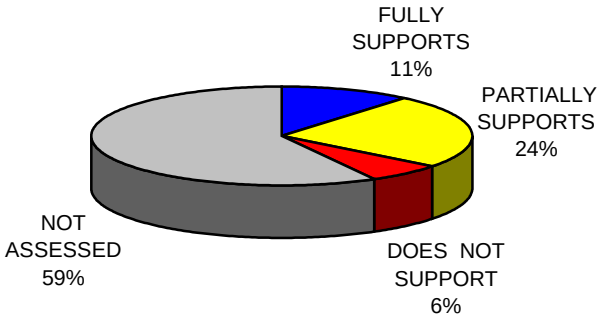
A detailed description of the watershed can be found in Chapter 2. The North Fork Forked Deer River Watershed is approximately 962 square miles and includes parts of six West Tennessee counties. A part of the Mississippi River drainage basin, the watershed has 1,314 stream miles and 655 lake acres.




*Land Use in the North Fork Forked Deer River Watershed is based on MRLC Satellite Imagery.*

Three interpretive areas and one wildlife management area are located in the watershed. Eleven rare plant and animal species have been documented in the watershed, including one rare fish species and one rare mussel species.

A review of water quality sampling and assessment is presented in Chapter 3. Using the Watershed Approach to Water Quality, 32 sampling sites were utilized in the North Fork Forked Deer River Watershed. These were ambient, ecoregion or watershed monitoring sites. Monitoring results support the conclusion that 11% of total stream miles (based on RF3) fully support designated uses.




*Water Quality Assessment in the North Fork Forked Deer River Watershed is Based on the 1998 303(d) List.*

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 Organic Enrichment/Low Dissolved Oxygen, Pathogens, Habitat Alteration and Siltation.

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


*HUC-10 Subwatersheds in the North Fork Forked Deer River Watershed.*

Point source contributions to the North Fork Forked Deer River Watershed consist of ten individual NPDES-permitted facilities, nine 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 (32), Tennessee Multi-Sector Permits (49), Mining Permits (2), and Concentrated Animal Feeding Operation Permits (1). 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 North Fork Forked Deer 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, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Geological Survey), and state agencies (TDEC Division of Community Assistance, TDEC Division of Water Supply, West Tennessee River Basin Authority and Tennessee Department of Agriculture) are summarized.

Point and Nonpoint source approaches to water quality problems in the North Fork Forked Deer 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 North Fork Forked Deer 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.

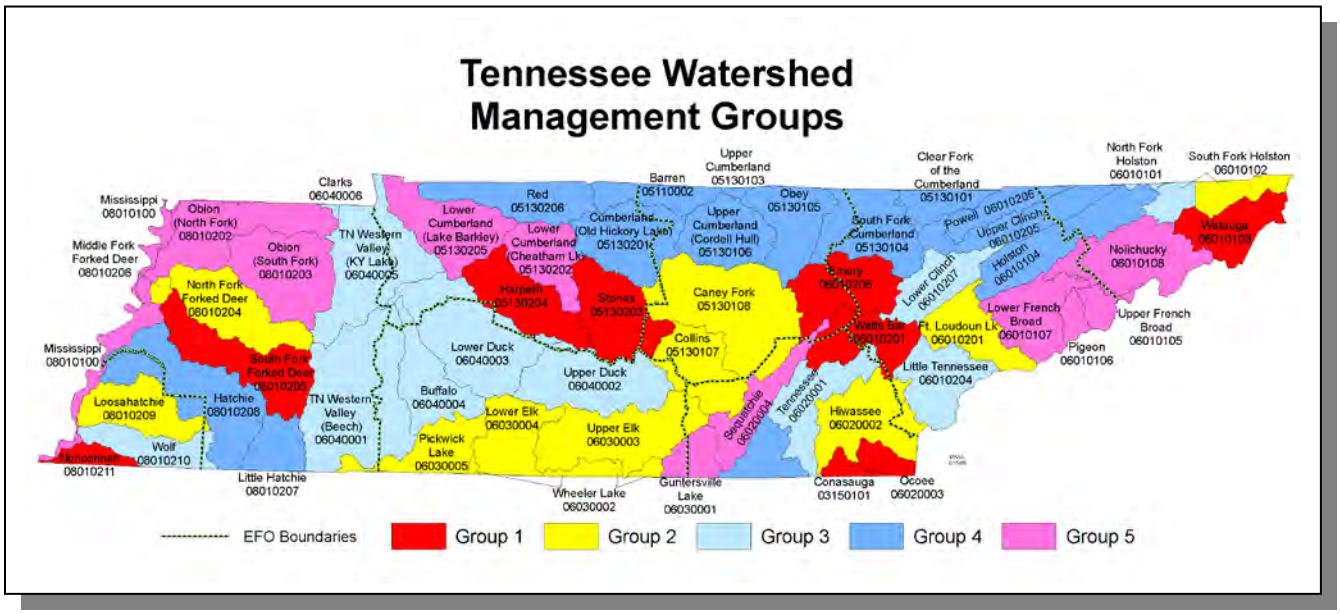



***Figure 1-1. Watershed Groups in Tennessee's Watershed Approach to Water Quality.***

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

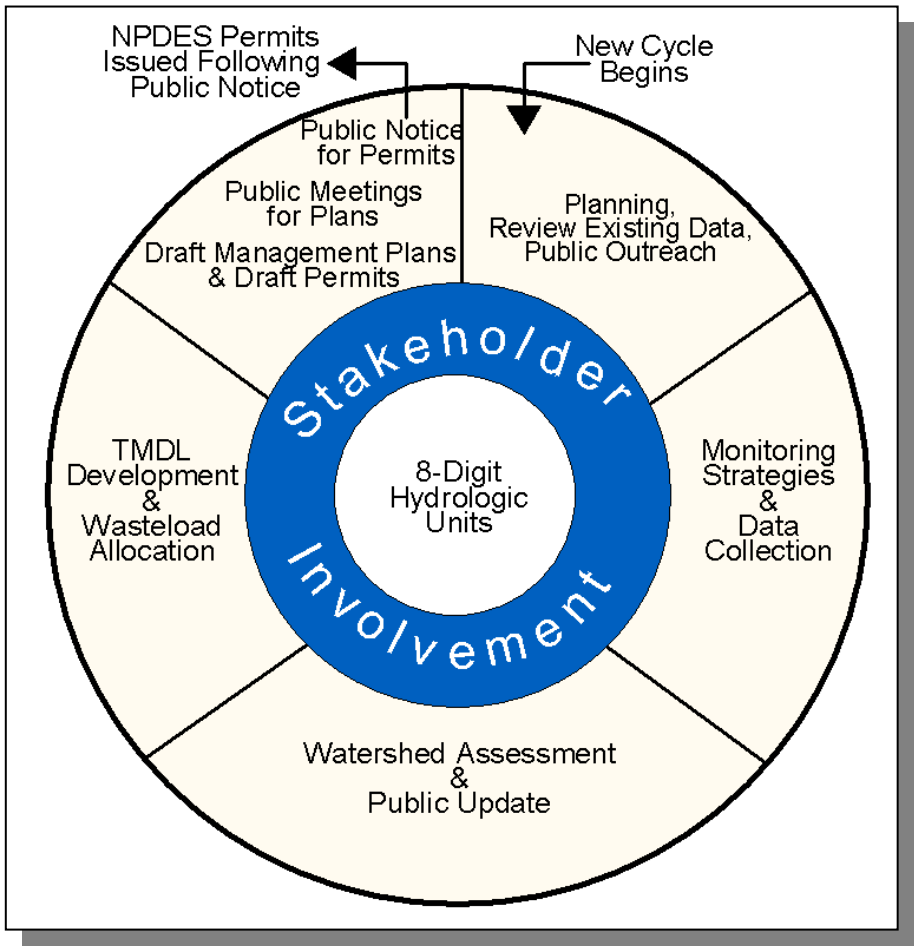



***Figure 1-2. The Watershed Approach Cycle.***

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 NORTH FORK FORKED DEER RIVER WATERSHED



**2.1. BACKGROUND.** The North Fork Forked Deer Watershed contains streams with increased gradient, generally sandy substrates, and distinctive faunal characteristics. The Forked Deer river system has wide floodplains. Most of its streams have been channelized.

Waterfowl, raptors, and migratory songbirds are relatively abundant in the region. The watershed supports cotton and grain production. Wildlife Management Areas attract duck hunters.

This Chapter describes the location and characteristics of the North Fork Forked Deer River Watershed.

## 2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The North Fork Forked Deer River Watershed is located in West Tennessee and includes parts of Carroll, Crockett, Dyer, Gibson, Henderson, and Madison Counties.

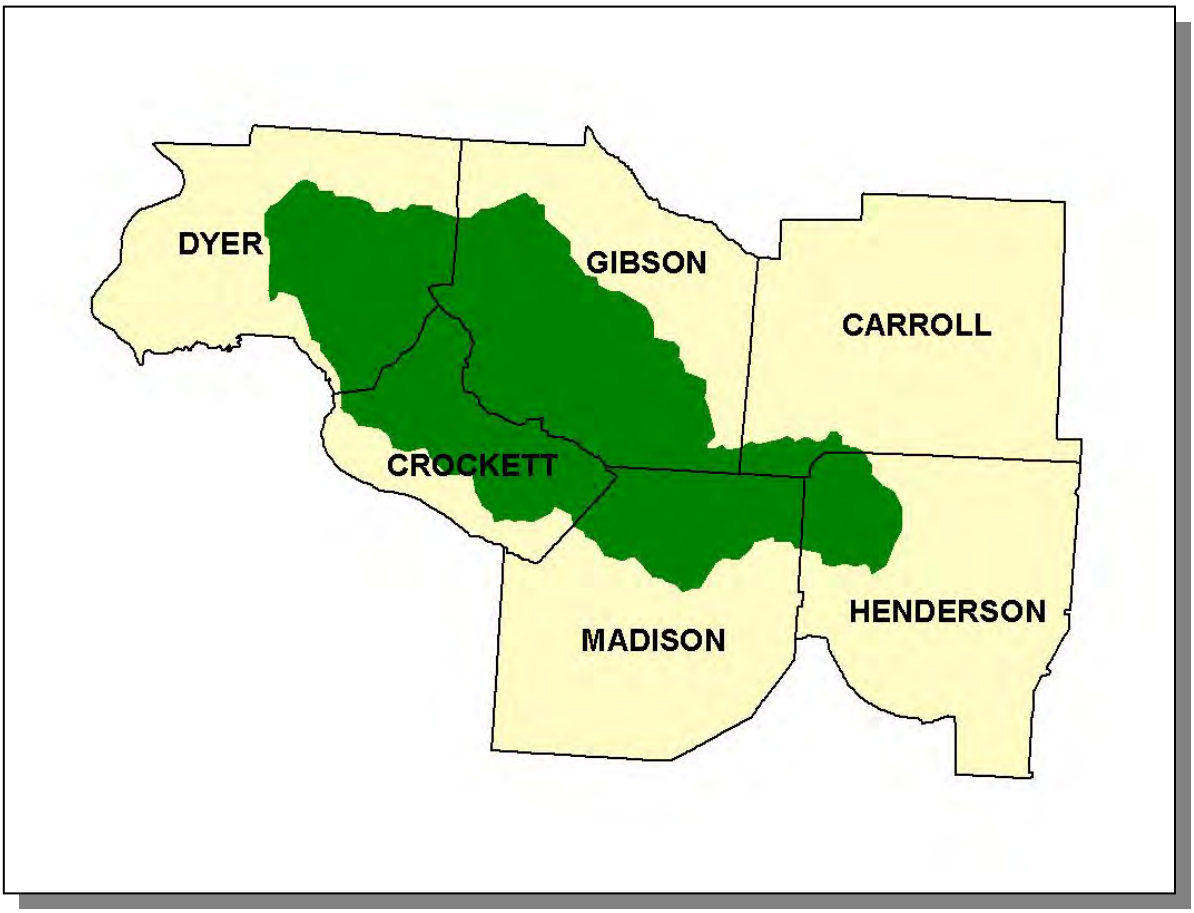



*Figure 2-1. General Location of the North Fork Forked Deer River Watershed.*

| COUNTY | % OF WATERSHED IN EACH COUNTY |
|---|---|
| Henderson | 47.5 |
| Madison | 27.6 |
| Gibson | 24.9 |
| Dyer | 19.8 |
| Crockett | 9.8 |
| Carroll | 7.4 |

*Table 2-1. The North Fork Forked Deer River Watershed Includes Parts of Six West Tennessee Counties.*

2.2.B. Population Density Centers. Two interstates (I-40, I-155) and six state highways serve the major communities in the North Fork Forked Deer River Watershed.


***Figure 2-2. Municipalities and Roads in the North Fork Forked Deer River Watershed.***

| MUNICIPALITY | POPULATION | COUNTY |
|---|---|---|
| Alamo* | 2,396 | Crockett |
| Dyer | 2,239 | Gibson |
| Dyersburg* | 18,658 | Dyer |
| Friendship | 486 | Crockett |
| Gadsden | 540 | Crockett |
| Gibson | 365 | Gibson |
| Humboldt | 9,672 | Gibson |
| Maury City | 816 | Crockett |
| Medina | 702 | Gibson |
| Newbern | 2,868 | Dyer |
| Trenton* | 4,646 | Gibson |
| Yorkville | 370 | Gibson |

***Table 2-2. Municipalities in the North Fork Forked Deer River Watershed.*** *Population based on 1996 census (Tennessee Blue Book). Asterisk (*) indicates county seat.*

## 2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The North Fork Forked Deer River Watershed, designated the Hydrologic Unit Code 08010204 by the USGS, is approximately 962 square miles, includes the Middle Fork Forked Deer River, and drains to the Forked Deer River.

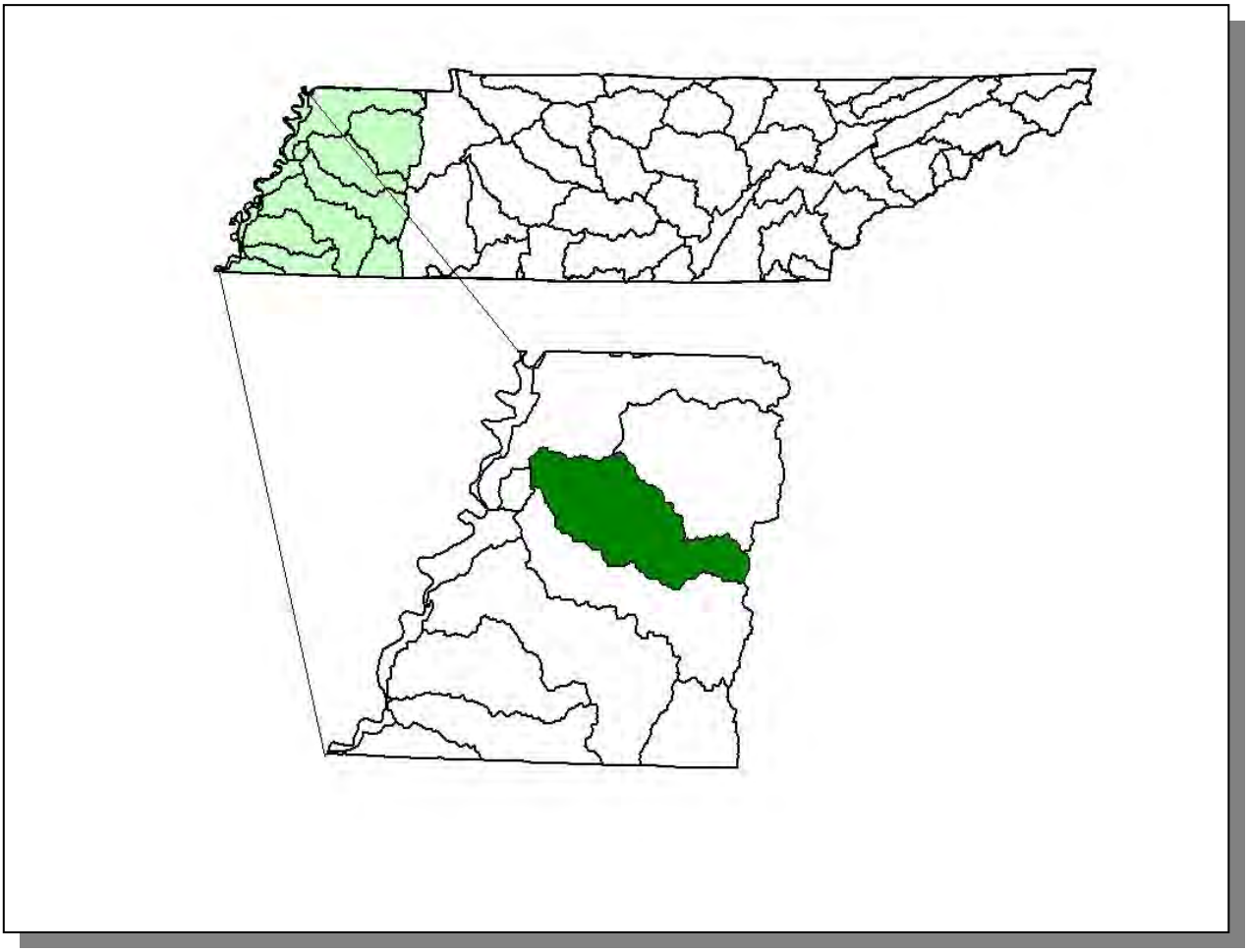


***Figure 2-3. The North Fork Forked Deer River Watershed is Part of the Mississippi River Basin.***

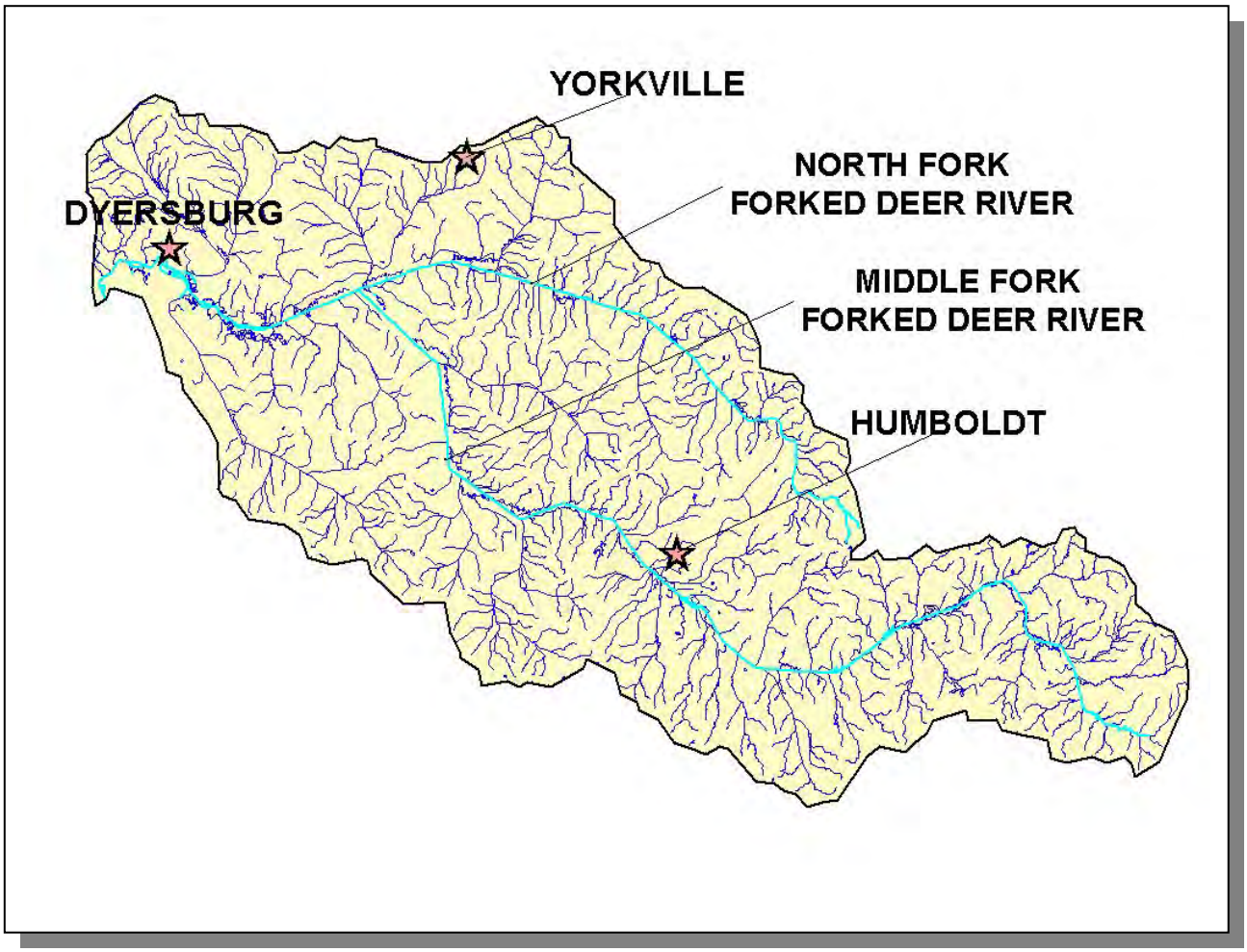



***Figure 2-4. Hydrology in the North Fork Forked Deer River Watershed.*** *There are 1,314 stream miles and 655 lake acres recorded in River Reach File 3 in the North Fork Forked Deer River Watershed. Locations of North Fork Forked Deer River, Middle Fork Forked Deer River, and the cities of Dyersburg, Humboldt, and Yorkville are shown for reference.*

2.3.B. Dams. There are 57 dams inventoried by TDEC Division of Water Supply in the North Fork Forked Deer River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

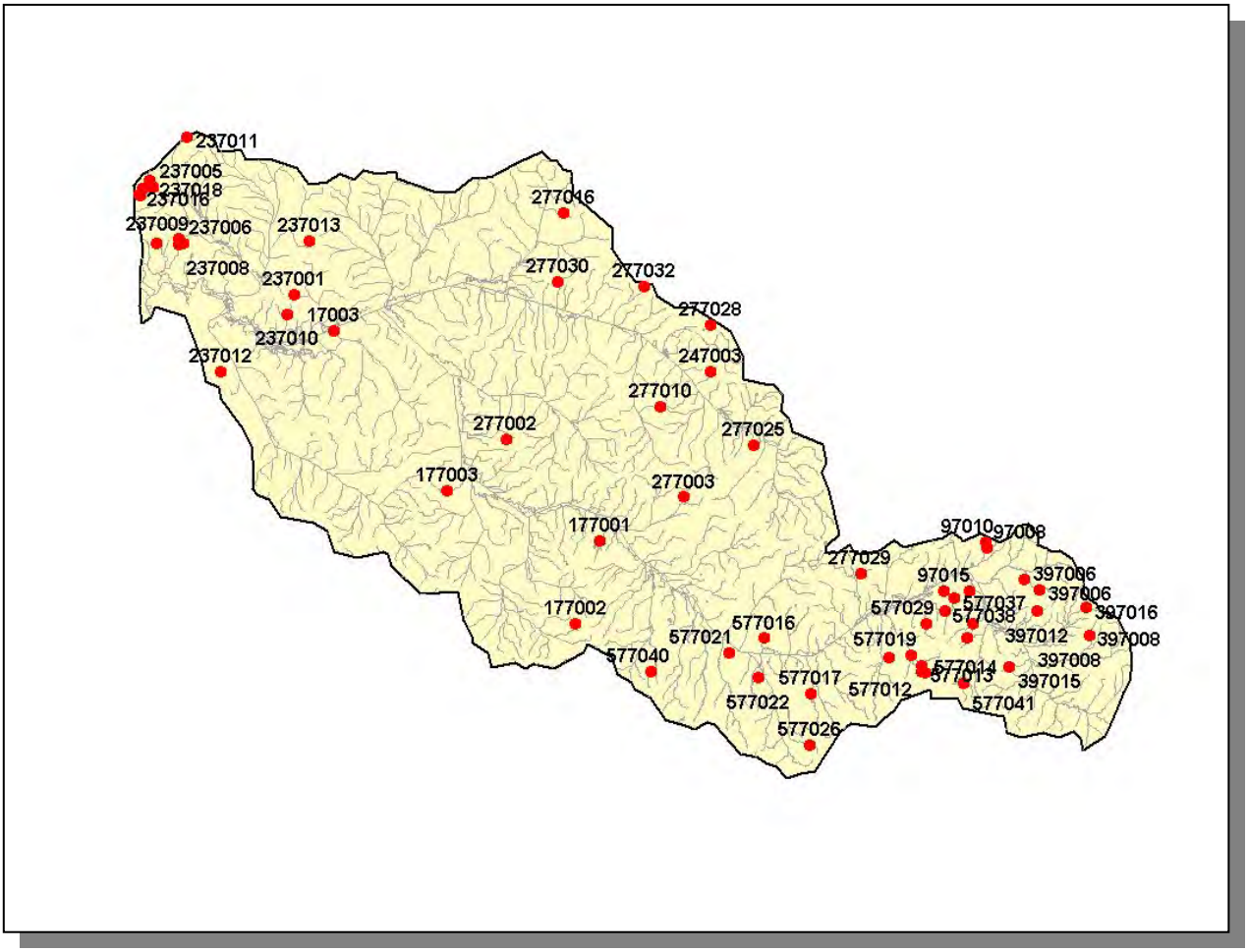



***Figure 2-5. Location of Inventoried Dams in the North Fork Forked Deer River Watershed.***
*More information is provided in NFFD-Appendix II and on the TDEC homepage at:*
*http://gwidc.gwi.memphis.edu/website/dams/viewer.htm*

**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.

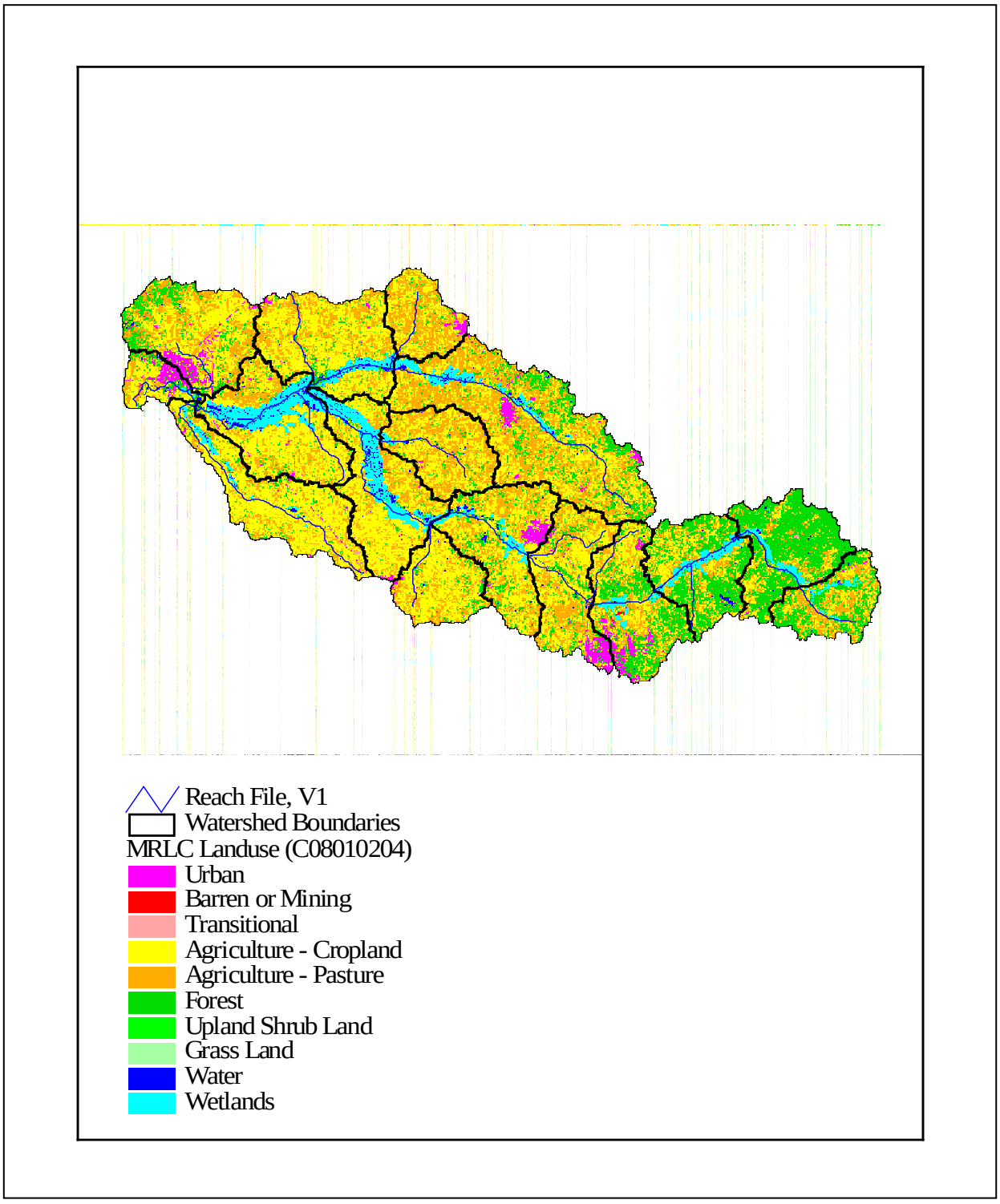



***Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.***

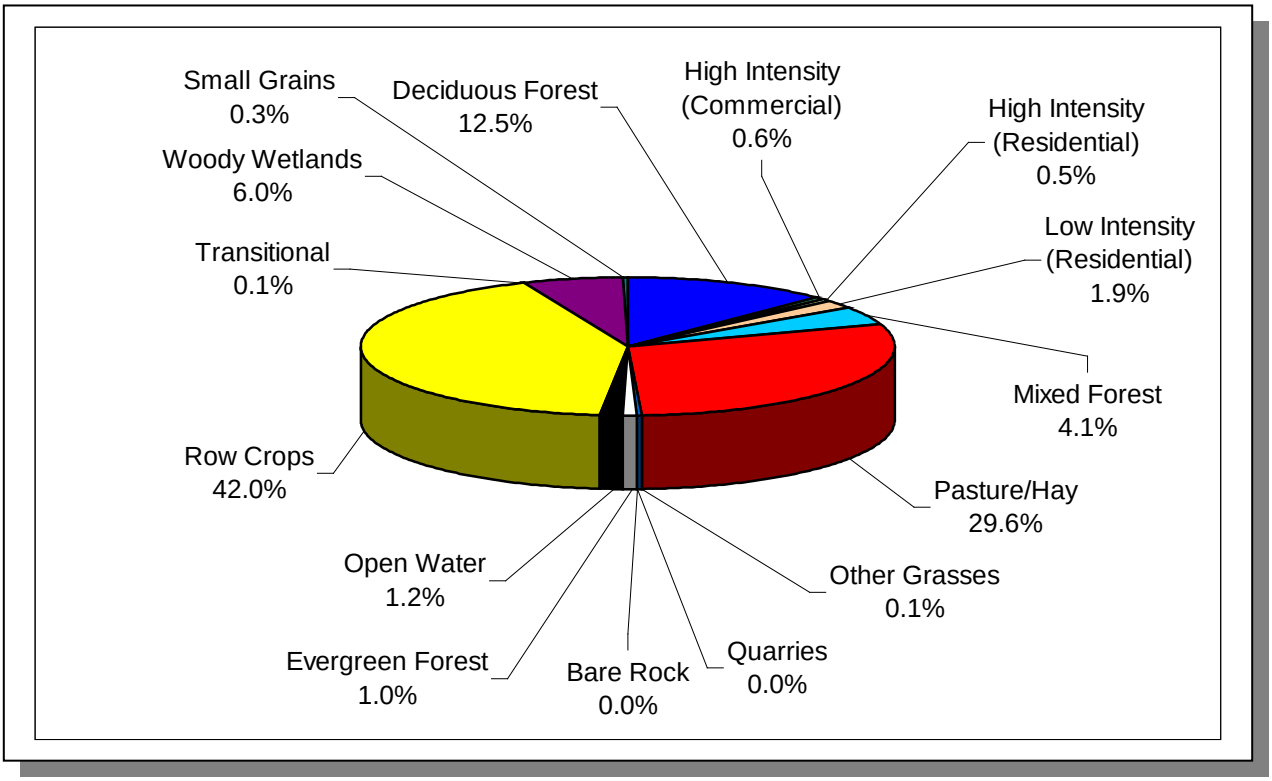



***Figure 2-7. Land Use Distribution in the North Fork Forked Deer River Watershed.*** *More information is provided in NFFD-Appendix II.*

**2.5. ECOREGIONS AND REFERENCE STREAMS.** Ecoregions are defined as 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 include 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 North Fork Forked Deer River Watershed lies within 3 Level III ecoregions (Southern Plains, Mississippi Alluvial Plain, Mississippi Valley Loess Plain) and contains 4 Level IV subecoregions (Griffen, Omernik, Azavedo, 1997):

- The Southeastern Plains and Hills (65e) contain several north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, and Cretaceous-age fine sand, fossiliferous micaceous sand, and silty clays are to the east. With elevations reaching over 650 feet, and more rolling topography and more relief than the Loess Plains (74b) to the west, streams have increased gradient, generally sandy substrates, and distinctive faunal characteristics for west Tennessee. The natural vegetation type is oak-hickory forest, grading into oak-hickory-pine to the south.

- The Northern Mississippi Alluvial Plain (73a) within Tennessee is a relatively flat region of Quaternary alluvial deposits of sand, silt, clay, and gravel. It is bounded distinctly on the east by the Bluff Hills (74a), and on the west by the Mississippi River. Average elevations are 200-300 feet with little relief. Most of the region is in cropland, with some areas of deciduous forest. Soybeans, cotton, corn, sorghum, and vegetables are the main crops. The natural vegetation consists of Southern floodplain forest (oak, tupelo, bald cypress). The two main distinctions in the Tennessee portion of the ecoregion are between areas of loamy, silty, and sandy soils with better drainage, and areas of more clayey soils of poor drainage that may contain wooded swamp-land and oxbow lakes. Waterfowl, raptors, and migratory songbirds are relatively abundant in the region.

- The Bluff Hills (74a) consist of sand, clay, silt, and lignite, and are capped by looess greater than 60 feet deep. The disjunct region in Tennessee encompasses those thick loess areas that are generally the steepest, most dissected, and forested. The carved loess has a mosaic of microenvironments, including dry slopes and ridges, moist slopes, ravines, bottomland areas, and small cypress swamps. While oak-hickory is the general forest type, some of the undisturbed bluff vegetation is rich in mesophytes, such as beech and sugar maple, with similarities to hardwood forests of eastern Tennessee. Smaller streams of the Bluff Hills have localized reaches of increased gradient and small areas of gravel substrate that create aquatic habitats that are distinct from those of the Loess Plains (74b) to the east. Unique, isolated fish assemblages more typical of upland habitats can be found in these stream reaches. Gravels are also exposed in places at the base of the bluffs.

- The Loess Plains (74b) are gently rolling, irregular plains, 250-500 feet in elevation, with loess up to 50 feet thick. The region is a productive agricultural area of soybeans, cotton, corn, milo, and sorghum crops, along with livestock and poultry. Soil erosion can be a problem on the steeper, upland Alfisol soils; bottom soils are mostly silty Entisols. Oak-hickory and southern floodplain forests are the natural vegetation types, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats still remain. Several large river systems with wide floodplains, the Obion, Forked Deer, Hatchie, Loosahatchie, and Wolf, cross the region. Streams are low-gradient and murky with silt and sand bottoms, and most have been channelized.

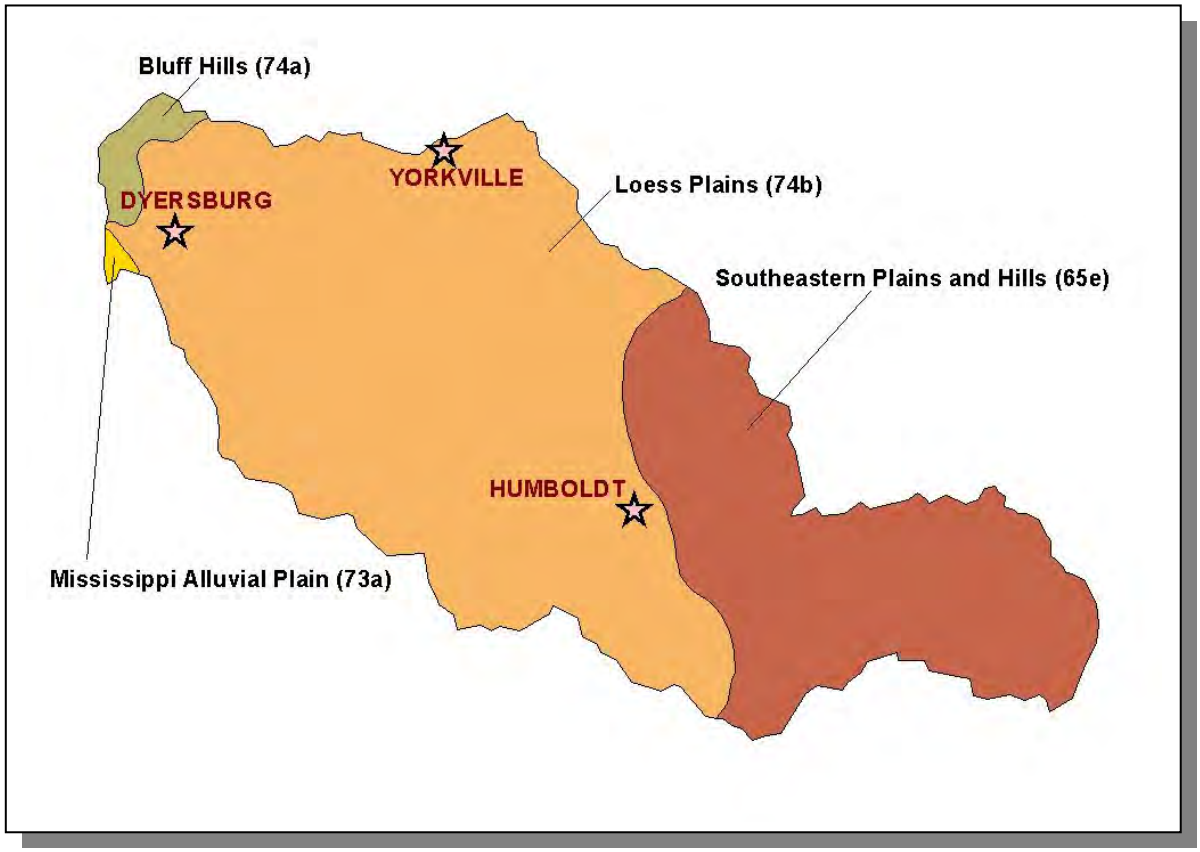



***Figure 2-8. Level IV Ecoregions in the North Fork Forked Deer River Watershed.*** *Locations of Dyersburg, Humboldt, and Yorkville are shown for reference.*

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.

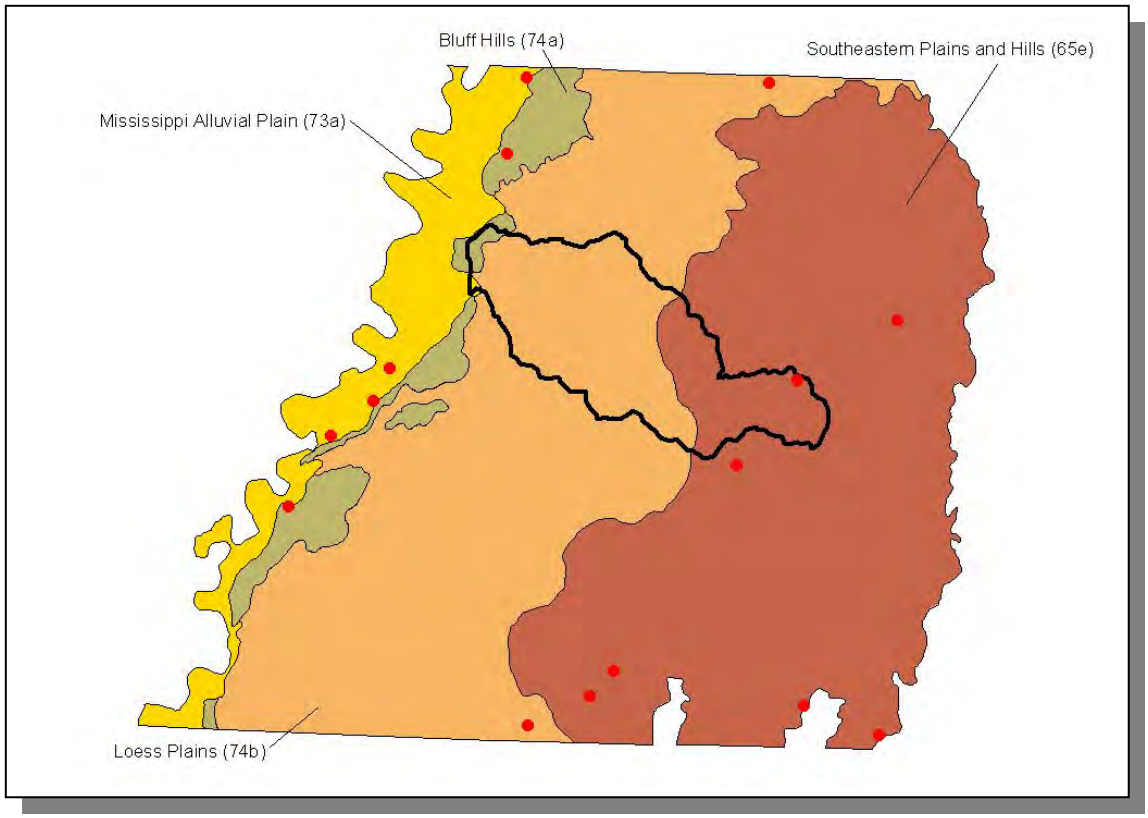



***Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 65e, 73a, 74a, and 74b.*** *The North Fork Forked Deer River Watershed is shown for reference. More information is provided in NFFD-Appendix II.*

## 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 | 0 |
| Insects | 0 |
| Mussels | 1 |
| Snails | 0 |
| | |
| Amphibians | 0 |
| Birds | 5 |
| Fish | 1 |
| Mammals | 0 |
| Reptiles | 0 |
| | |
| Plants | 4 |
| | |
| **Total** | **11** |

***Table 2-3. There are 11 Rare Plant and Animal Species in the North Fork Forked Deer River Watershed.***

In the North Fork Forked Deer River Watershed, there is one rare fish species, and one rare mussel species.

| SCIENTIFIC NAME | COMMON NAME | FEDERAL STATUS | STATE STATUS |
|---|---|---|---|
| *Etheostoma pyrrhogaster* | Firebelly darter | MC | D |
| | | | |
| *Pleurobema plenum* | Rough pigtoe | LE | E |

***Table 2-4. Rare Aquatic Species in the North Fork Forked Deer River Watershed.*** *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service; MC, Management Concern for the U.S. Fish and Wildlife Service. State Status: E, Listed Endangered 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/tnanimal.html.*

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/epo/wetlands/strategy.zip.

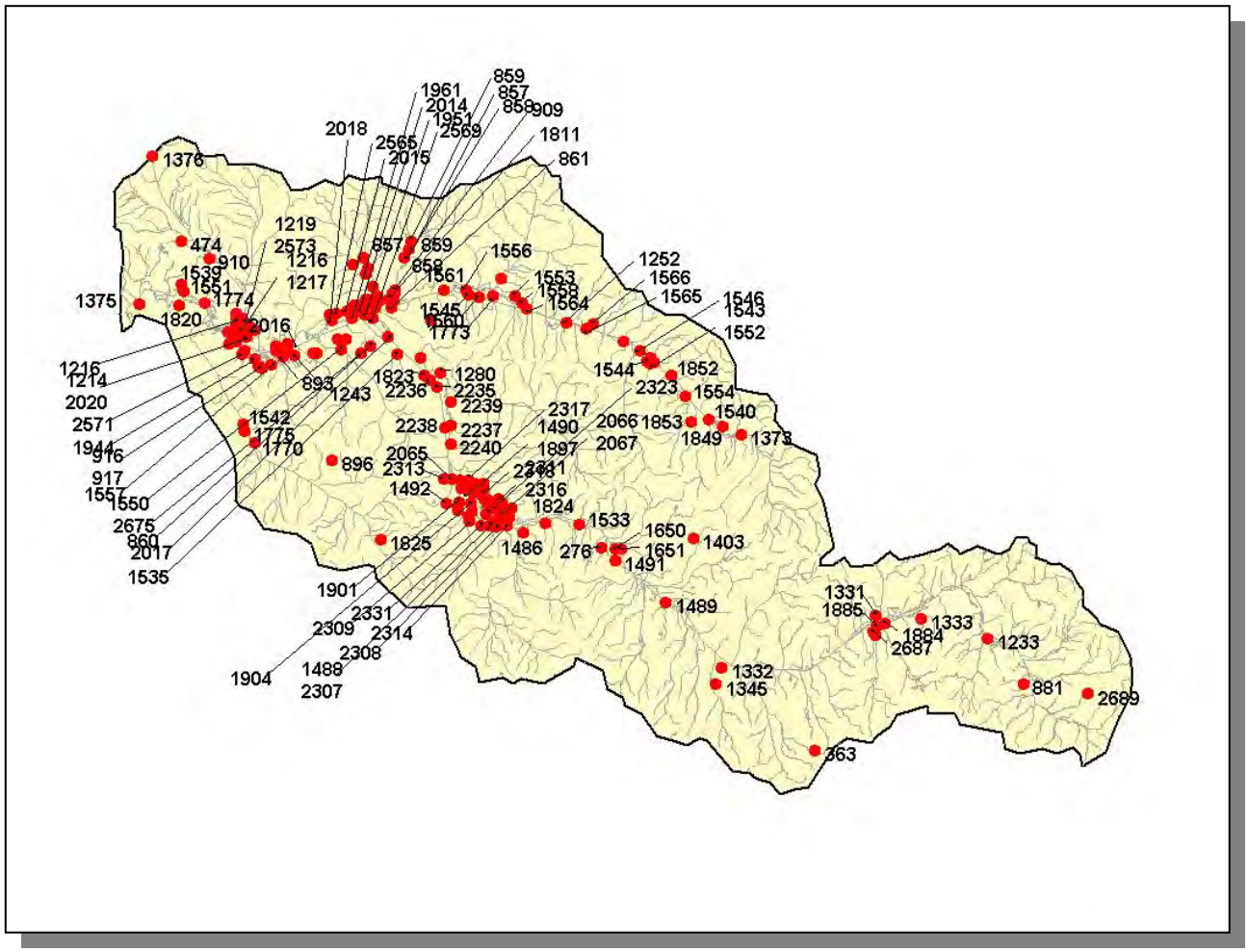



***Figure 2-10. Location of Wetland Sites in TDEC Division of Natural Heritage Database in North Fork Forked Deer River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands in the watershed****. More information is provided in NFFD-Appendix II.*

## 2.7. CULTURAL RESOURCES.

2.7.A. Interpretive Areas. Some sites representative of the cultural heritage are under city protection:

- Okeena Park
- Wheler Park
- Evansville Park

In addition, many local interpretive areas are common, most notably, Humboldt Lake.

2.7.B. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages Tigrett Wildlife Management Area and Horns Bluff Refuge.

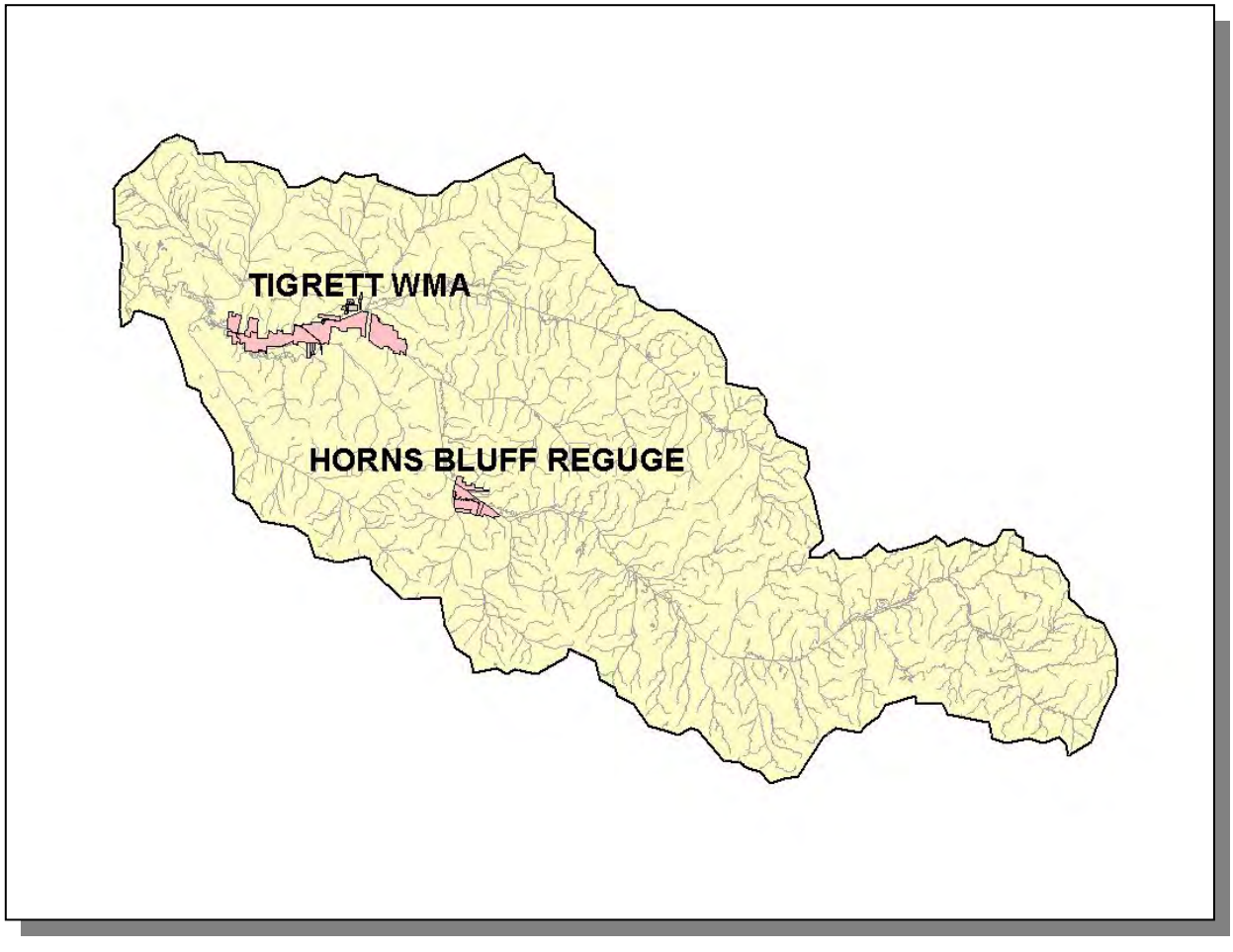



***Figure 2-11. TWRA Manages Tigrett Wildlife Management Area and Horns Bluff Refuge in the North Fork Forked Deer River Watershed.***

## 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 |
|---|---|---|---|---|---|---|---|
| Barnett Branch Middle Middle Fork Forked Deer | 4 | | | Light Creek | 3 | | |
| Beech Creek | 4 | | | Mathers Creek | 4 | | |
| Bethel Branch North Fork Forked deer | 4 | | | Middle Fork Forked Deer | 2 | 2 | 3 |
| Buck Creek (North) | 3 | 3 | | Miller Creek | 4 | | |
| Buck Creek (South) | 4 | | | Moize Creek | 3 | | |
| Cane Creek | 4 | | | Mud Creek | 2 | | |
| Cypress Creek | 4 | | 2,3 | North Fork Forked Deer | 3,4 | 2,3 | 2 |
| Davis Creek | 4 | | | Odell Creek | 4 | | |
| Deloach Creek | 4 | | | Oliver Branch North Fork | 4 | | |
| Doakville Creek | 4 | | | Forked Deer | 4 | | |
| Duffy Branch Middle Fork Forked Deer | 4 | | | Pond Creek | 4 | 3 | 2 |
| Dyer Creek | 4 | | | Reagan Creek | 4 | | |
| Gilmer's Creek | 3 | | | Rice Creek | 4 | | |
| Griffin Creek | 4 | | | Spring Creek | 3,4 | | |
| Harris Creek | 4 | | | Stokes Creek | 4 | | |
| Johnson Creek | 4 | | | Sugar Creek | 4 | | |
| Jones Creek | 3 | | | Susan Branch Griffin Creek | 4 | | |
| Lewis Creek | 3,4 | | 3 | Turkey Creek | 4 | | |
| Lewis Creek Drainage Ditch | 4 | | 3 | | | | |

***Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project.***

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 NORTH FORK FORKED DEER 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 are water quality limited and fail to support some or all of their classified uses. Water quality limited streams are those that have one or more properties that violate water quality standards. Therefore, the water body is considered to be impacted by pollution and is not fully meeting its designated 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/2002303dpropfinal.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 North Fork Forked Deer River Watershed, summarizes data collection and assessment results, and describes impaired waters.

**3.2. DATA COLLECTION.** Comprehensive water quality monitoring in the North Fork Forked Deer River Watershed was conducted in 1998. Data were collected from 18 sites and are from one of four types of sites: 1)Ambient sites, 2)Ecoregion sites, 3)Watershed sites or 4)Special Survey sites.

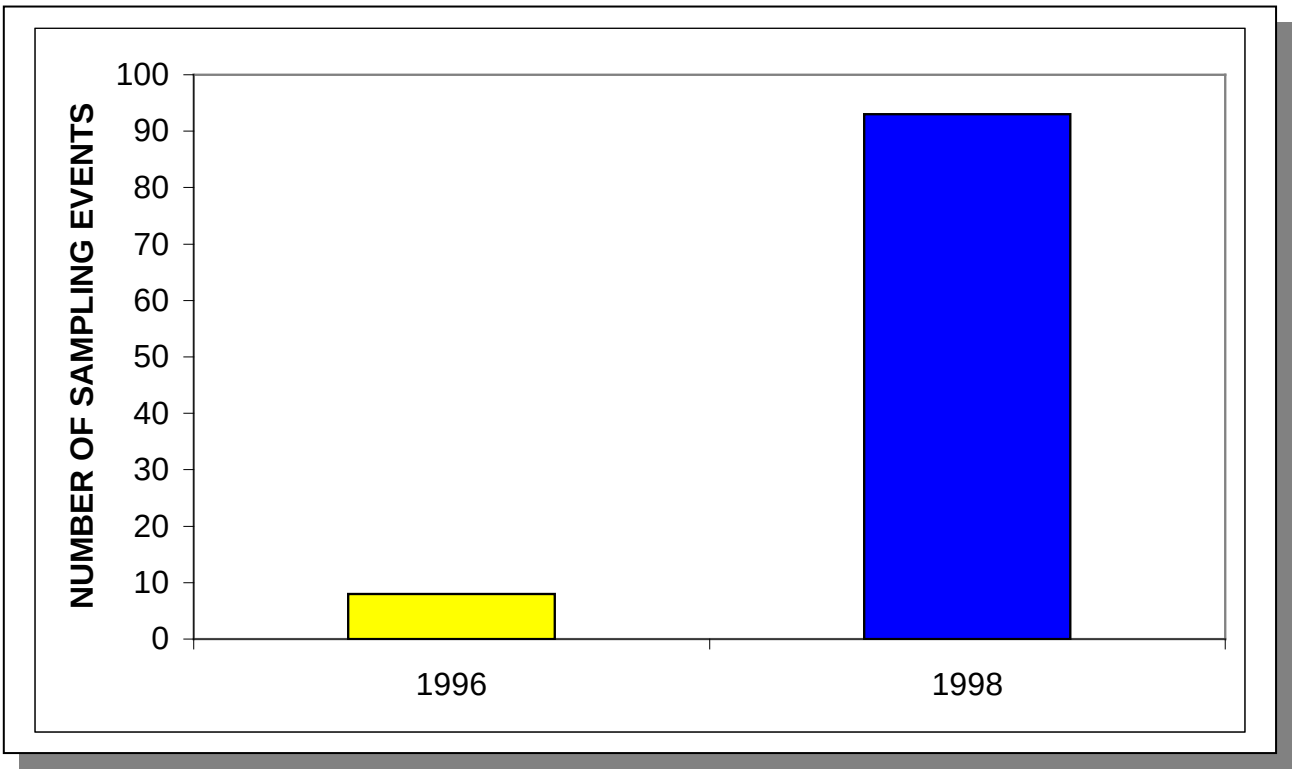



***Figure 3-1. Number of Sampling Events Using the Traditional Approach (1996) and Watershed Approach (1998) in the North Fork Forked Deer River Watershed.***

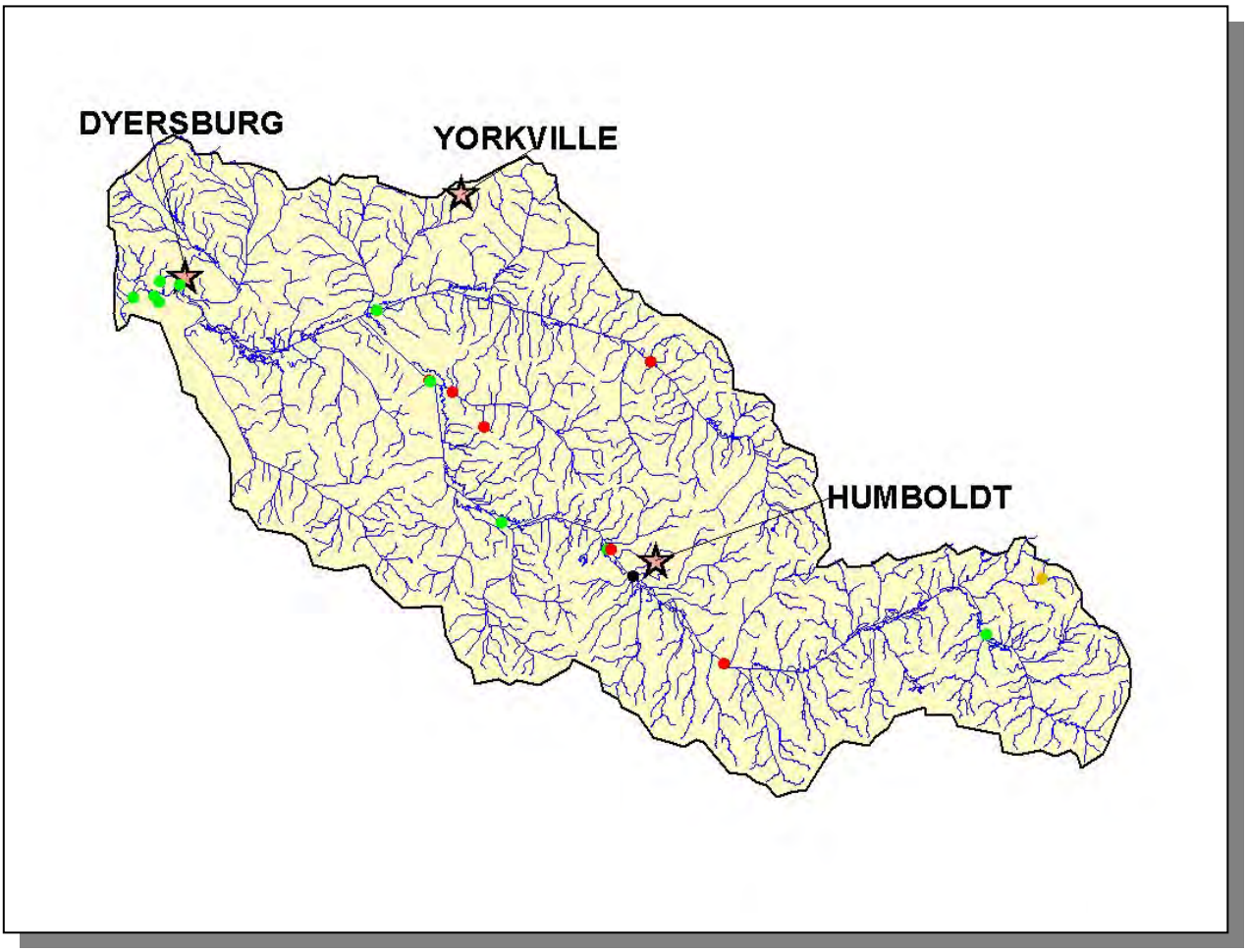



***Figure 3-2. Location of Monitoring Sites in the North Fork Forked Deer River Watershed.*** *Red, Watershed Monitoring Sites; Black, Special Survey Sites; Orange, Rapid Bioassessment Sites; Green, Ambient Monitoring Sites. Locations of Dyersburg, Humboldt, and Yorkville are shown for reference.*

| TYPE | NUMBER | TOTAL NUMBER OF SAMPLING EVENTS | | |
|---|---|---|---|---|
| | | CHEMICAL ONLY | BIOLOGICAL ONLY | BIOLOGICAL PLUS CHEMICAL (FIELD PARAMETERS) |
| Ambient | 1 | 8 | | |
| Ecoregion | 1 | 8 | | 4 |
| Watershed | 30 | 66 | | 10 |
| **Totals** | **32** | **82** | | **14** |

***Table 3-1. Monitoring Sites in the North Fork Forked Deer River Watershed During the Data Collection Phase of the Watershed Approach.***

In addition to the sampling events, 12 citizen complaints were investigated in 2002.

3.2.A. Ambient Monitoring Sites. These fixed-station chemical monitoring sites are sampled quarterly or monthly by the Environmental Assistance Center-Jackson 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 North Fork Forked Deer River Watershed are provided in NFFD-Appendix IV.

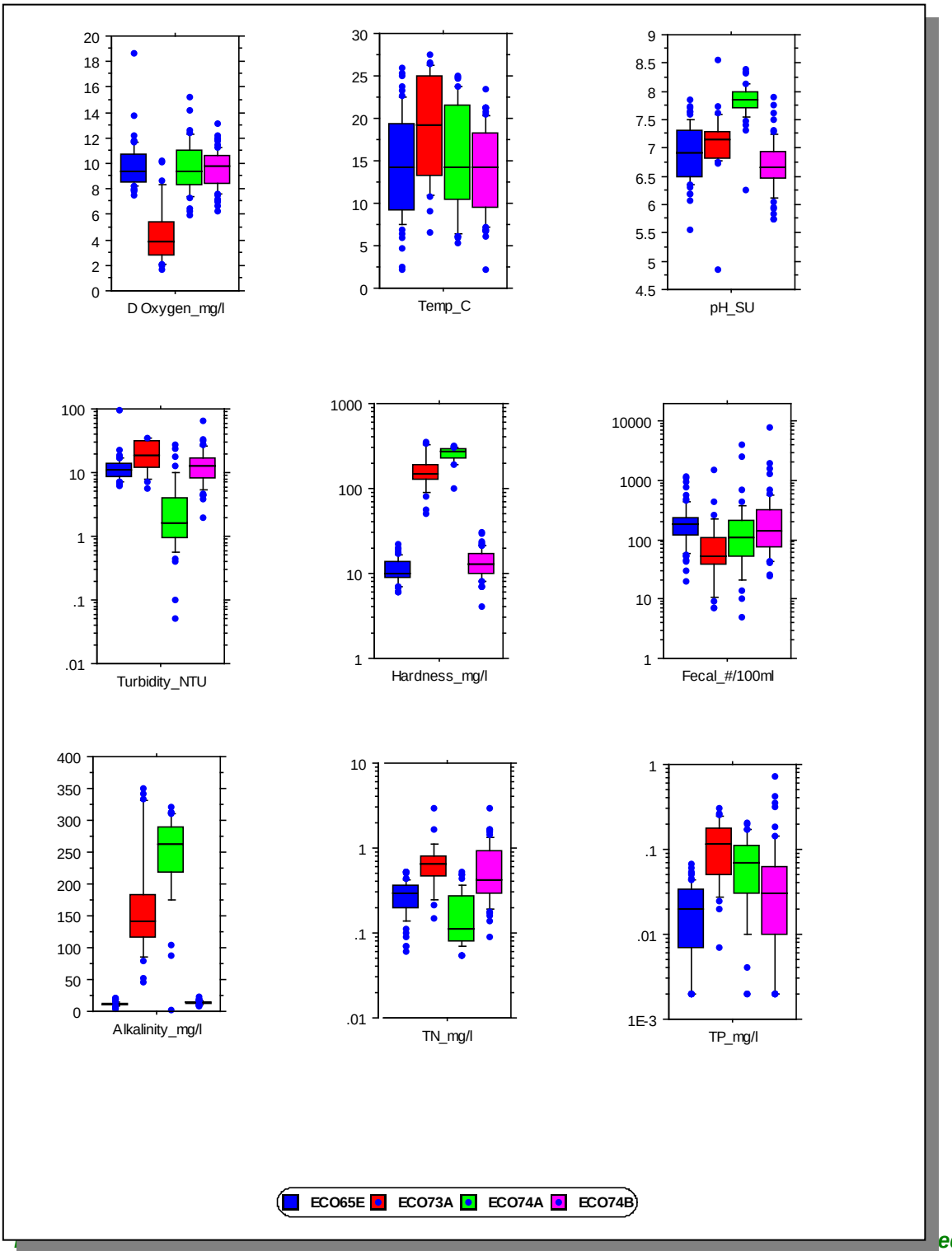
Data from ambient monitoring stations are entered into the STORET (Storage and Retrieval) system administered by EPA. Some ambient monitoring stations are scheduled to be monitored as watershed sampling sites.

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 North Fork Forked Deer River Watershed lies within 3 Level III ecoregions (Southeastern Plains, Mississippi Alluvial Plain, and Mississippi Valley Loess Plains) and contains 4 subecoregions (Level IV):

- Southeastern Plains and Hills (65e)
- Northern Mississippi Alluvial Plain (73a)
- Bluff Hills (74a)
- Loess Plains (74b)

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 as Watershed sampling sites.




***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.

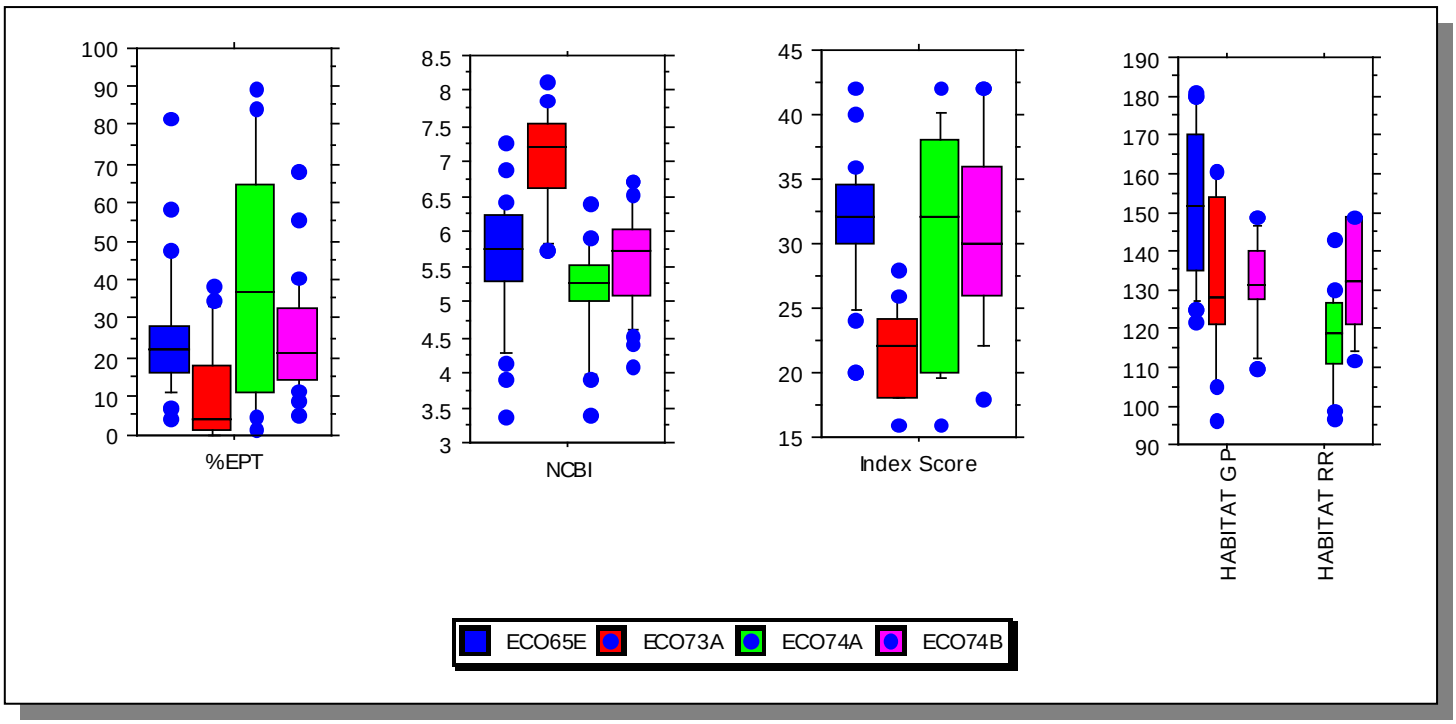



***Figure 3-4. Benthic Macroinvertebrate and Habitat Scores for North Fork Forked Deer River Watershed Ecoregion Sites.*** *Boxes and bars illustrate 10th, 25th, median, 75th, and 90th percentiles. Extreme values are also shown as dots. NCBI, North Carolina Biotic Index. Index Score, Habitat Riffle/Run, and Habitat Glide/Pool 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 Assistance Centers, 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.

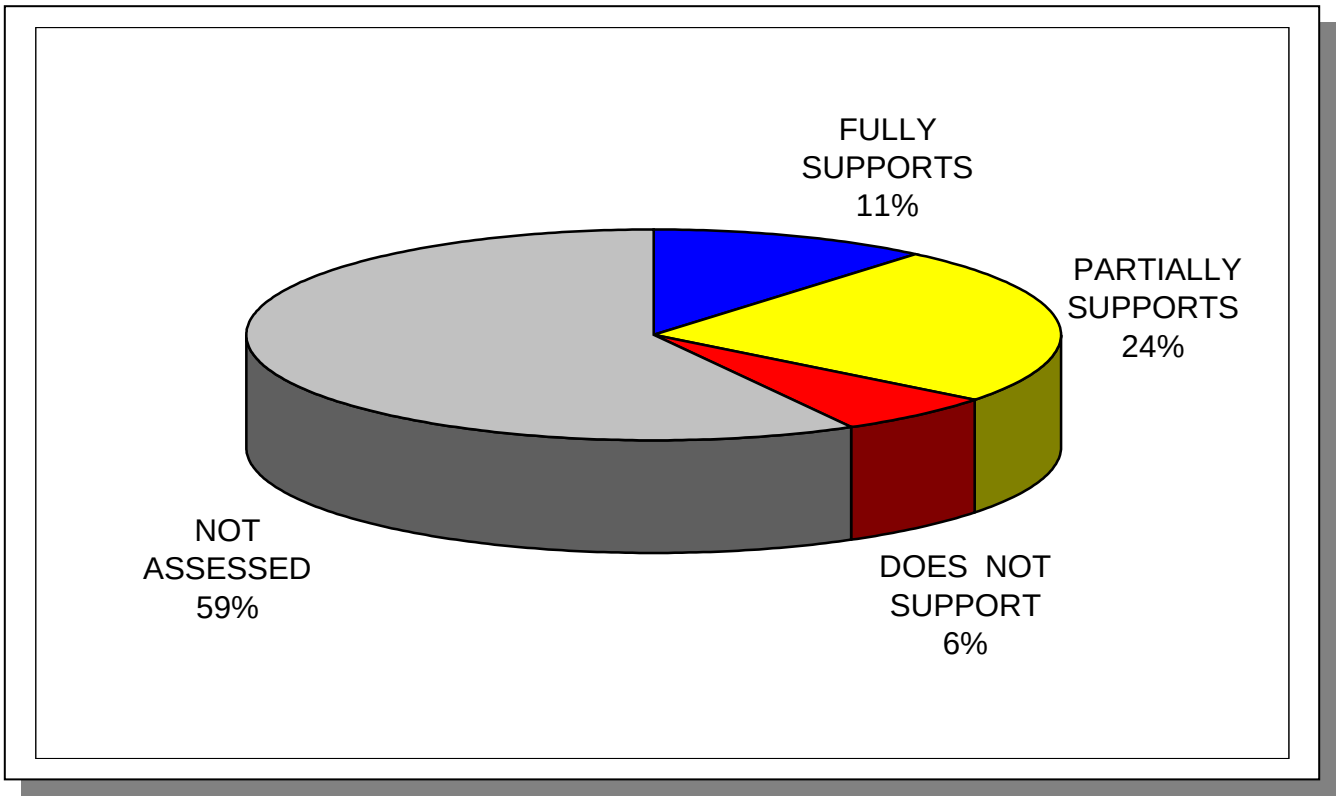



***Figure 3-5. Water Quality Assessment for Streams and Rivers in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment.*

## 3.3.A. Assessment Summary.

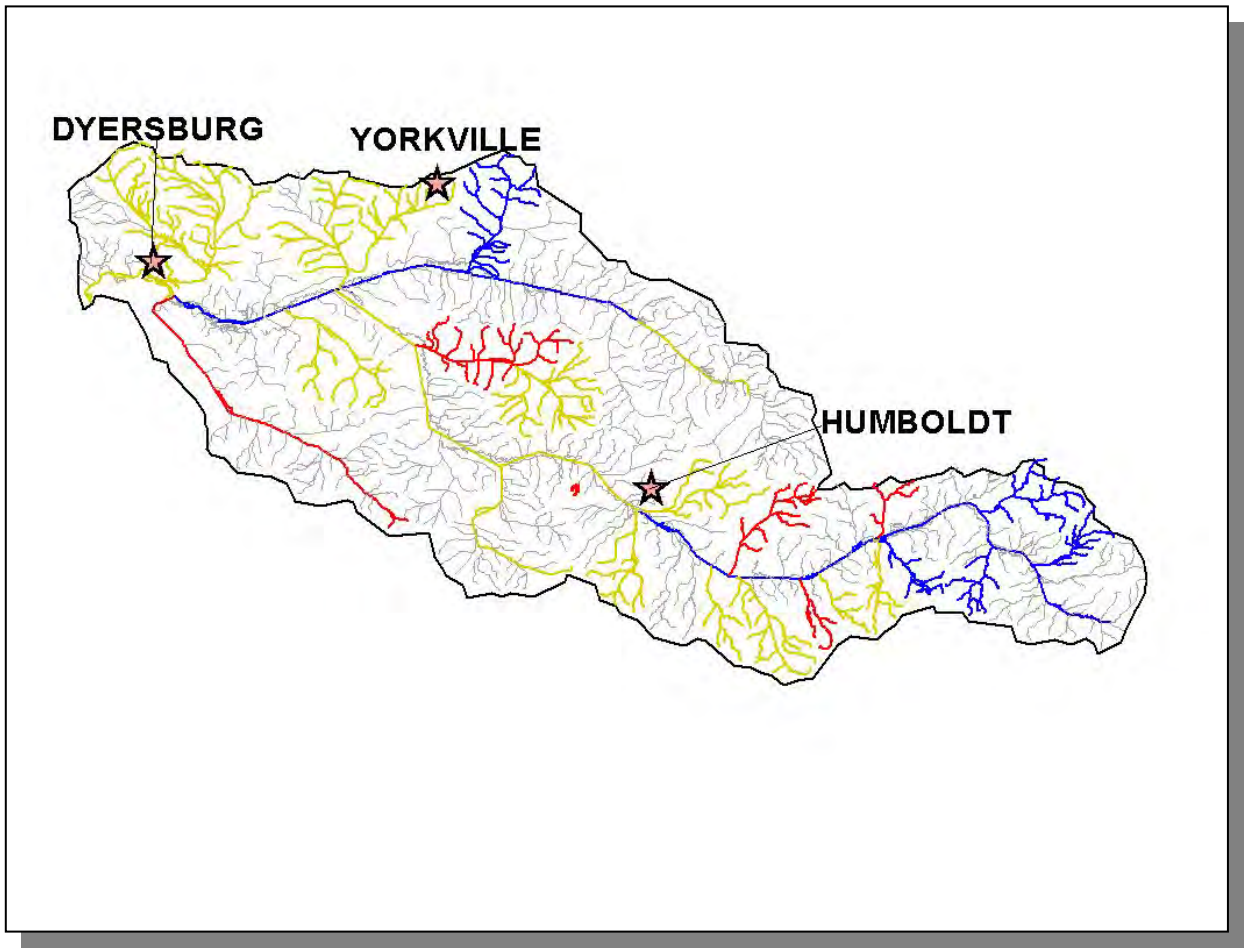



***Figure 3-6a. Overall Use Support Attainment in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Blue, Fully Supports Designated Use; Yellow, Partially Supports Designated Use; Red, Does Not Support Designated Use; Gray, Not Assessed. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Dyersburg, Humboldt, and Yorkville are shown for reference. More information is provided in NFFD-Appendix III.*

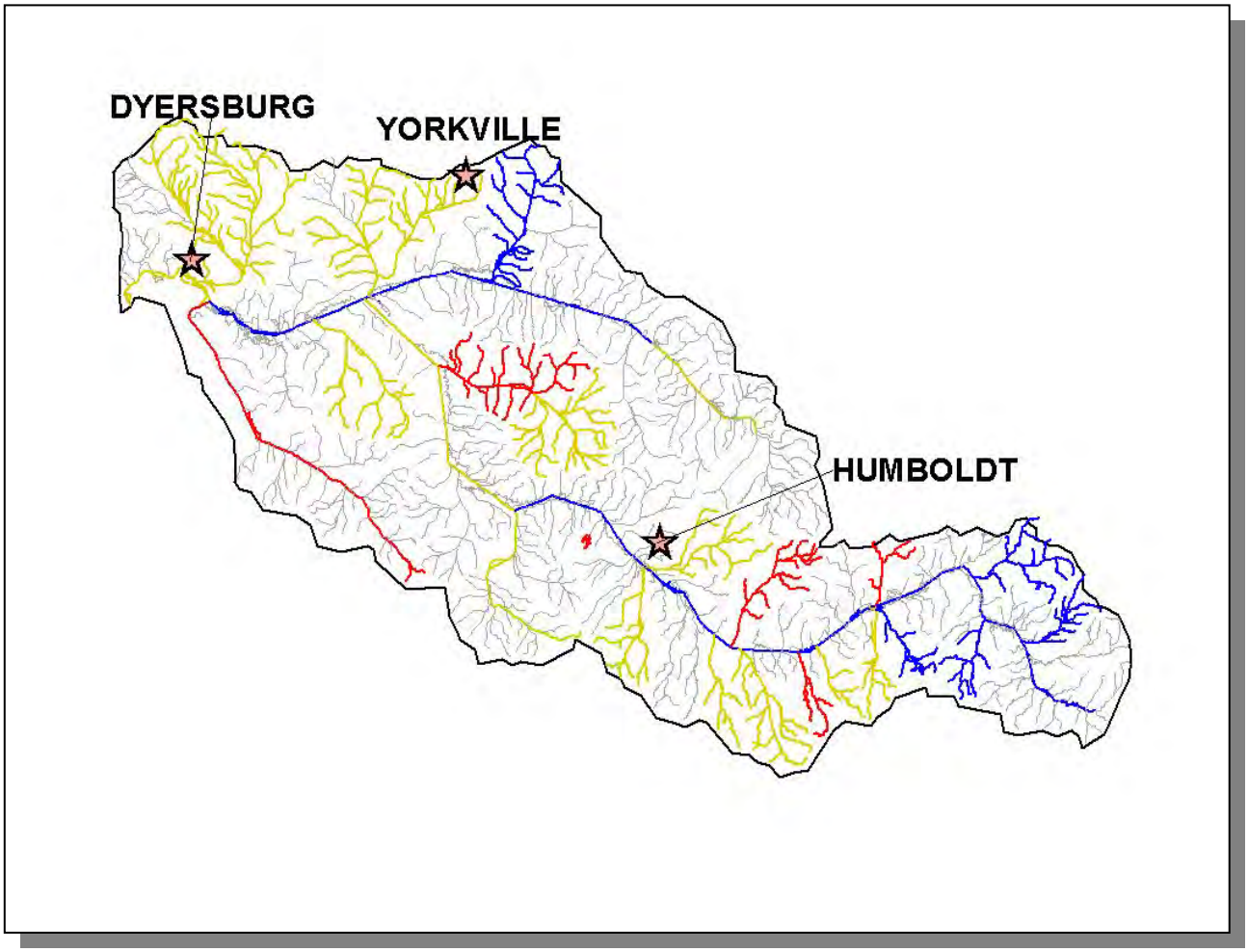



***Figure 3-6b. Fish and Aquatic Life Use Support Attainment in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Blue, Fully Supports Designated Use; Yellow, Partially Supports Designated Use; Red, Does Not Support Designated Use; Gray, Not Assessed. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Dyersburg, Humboldt, and Yorkville are shown for reference.*

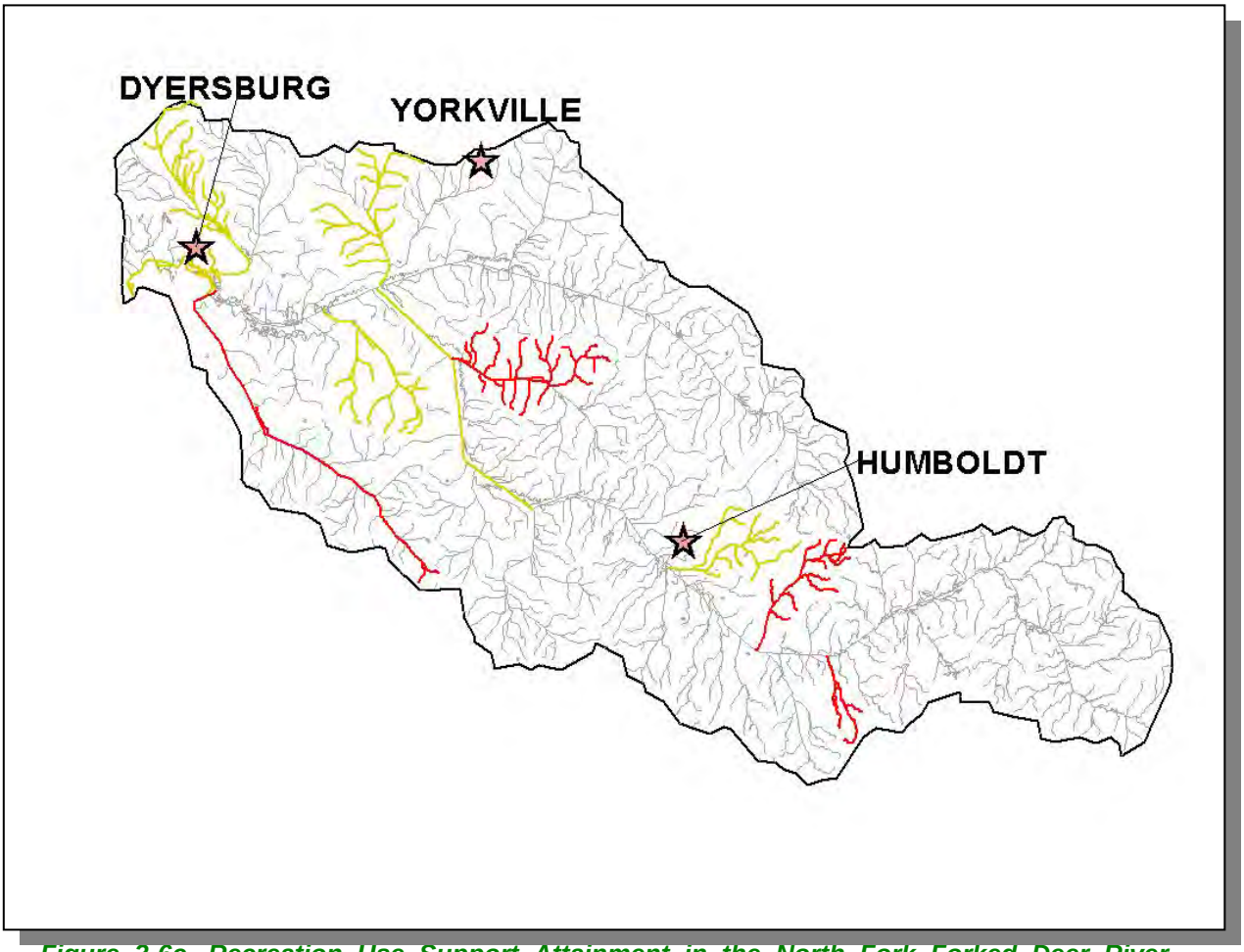



***Figure 3-6c. Recreation Use Support Attainment in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Blue, Fully Supports Designated Use; Yellow, Partially Supports Designated Use; Gray, Not Assessed. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Dyersburg, Humboldt, and Yorkville are shown for reference.*

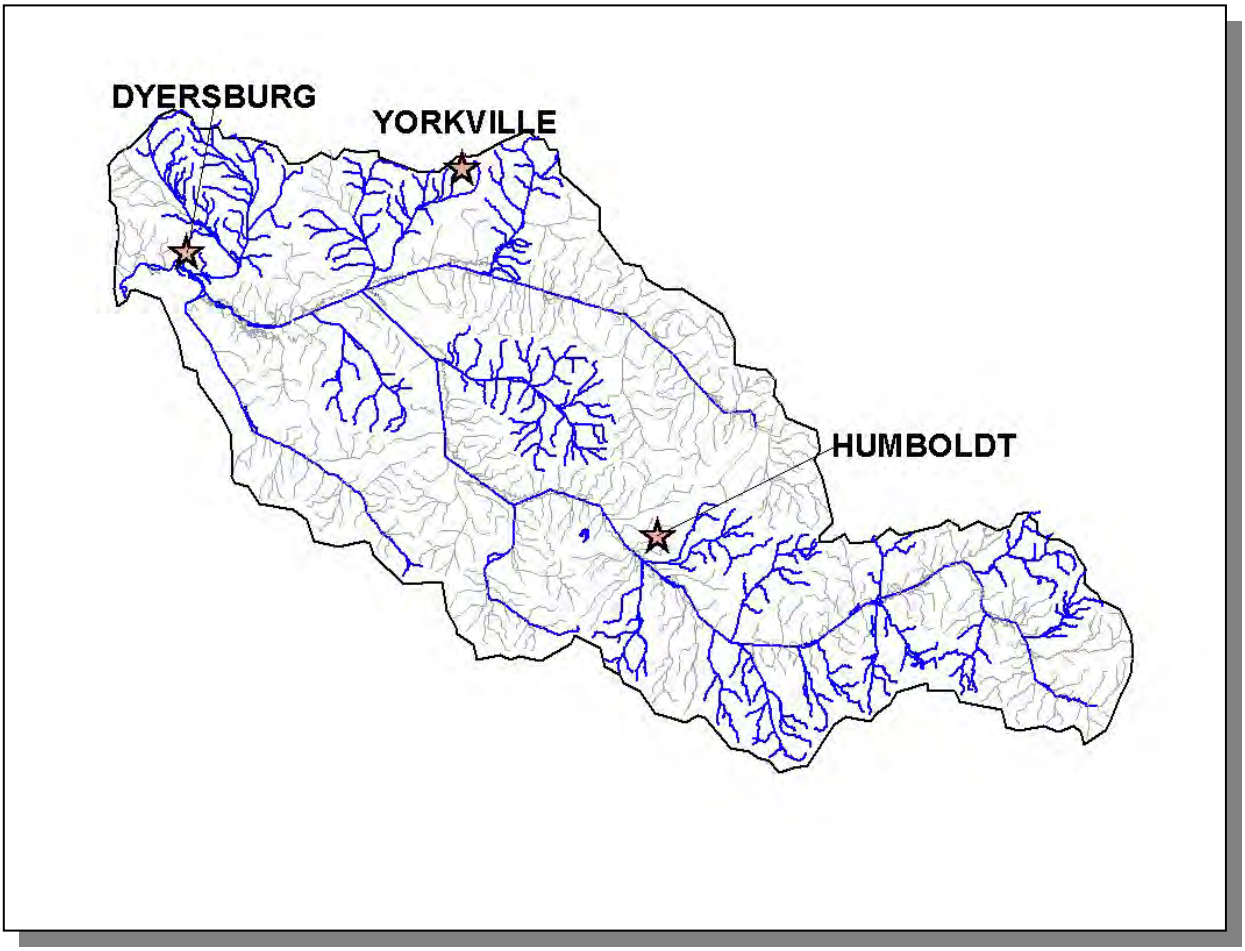



***Figure 3-6d. Irrigation Use Support Attainment in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Blue, Fully Supports Designated Use; Gray, Not Assessed. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Dyersburg, Humboldt, and Yorkville are shown for reference.*

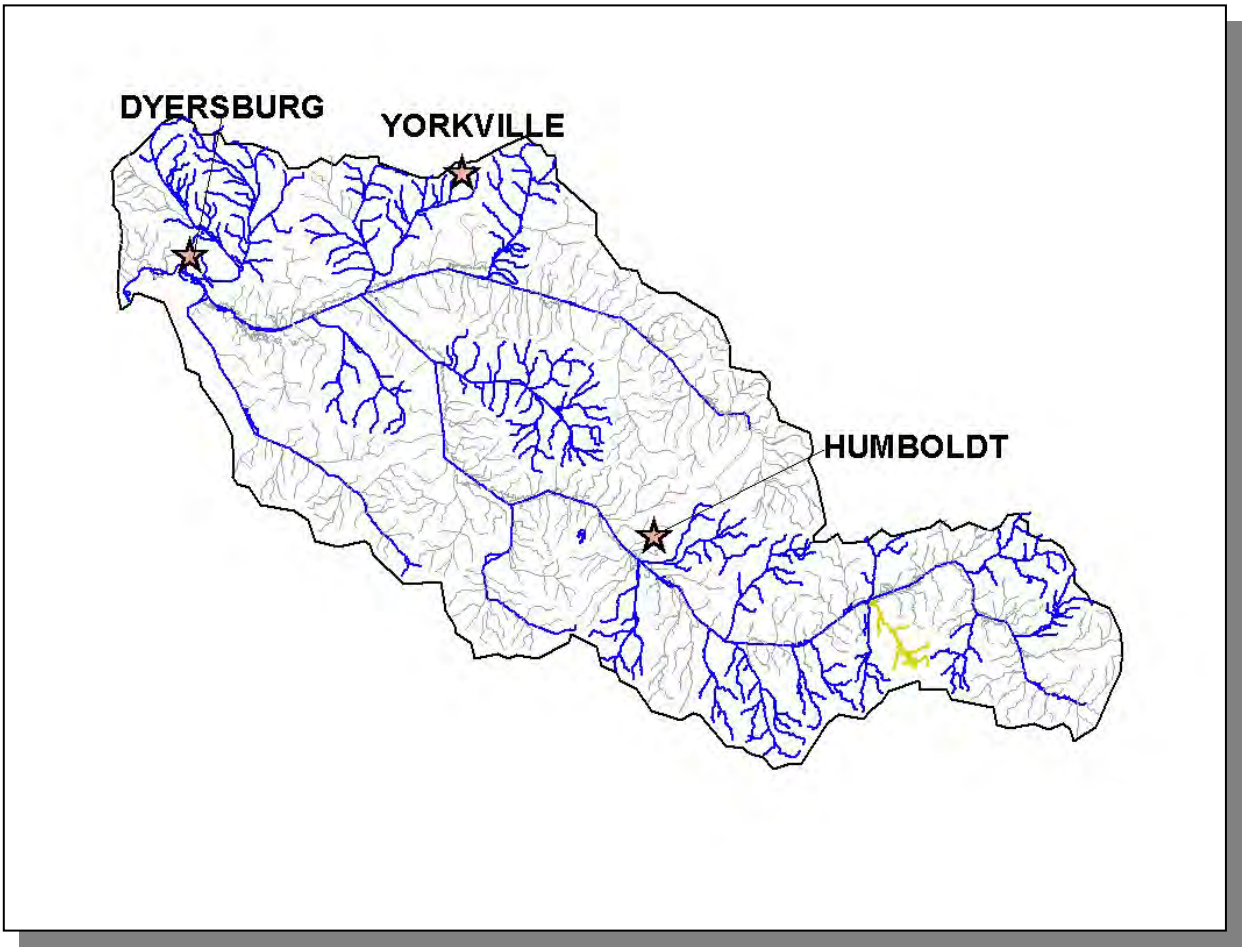



***Figure 3-7e. Livestock Watering and Wildlife Use Support Attainment in the North ForkF Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Blue, Fully Supports Designated Use; Gray, Not Assessed. Water Quality Standards are described at http://www.state.tn.us/sos/rules/1200/1200-04/1200-04.htm. Dyersburg, Humboldt, and Yorkville are shown for reference.*

3.3.B. Use Impairment Summary.

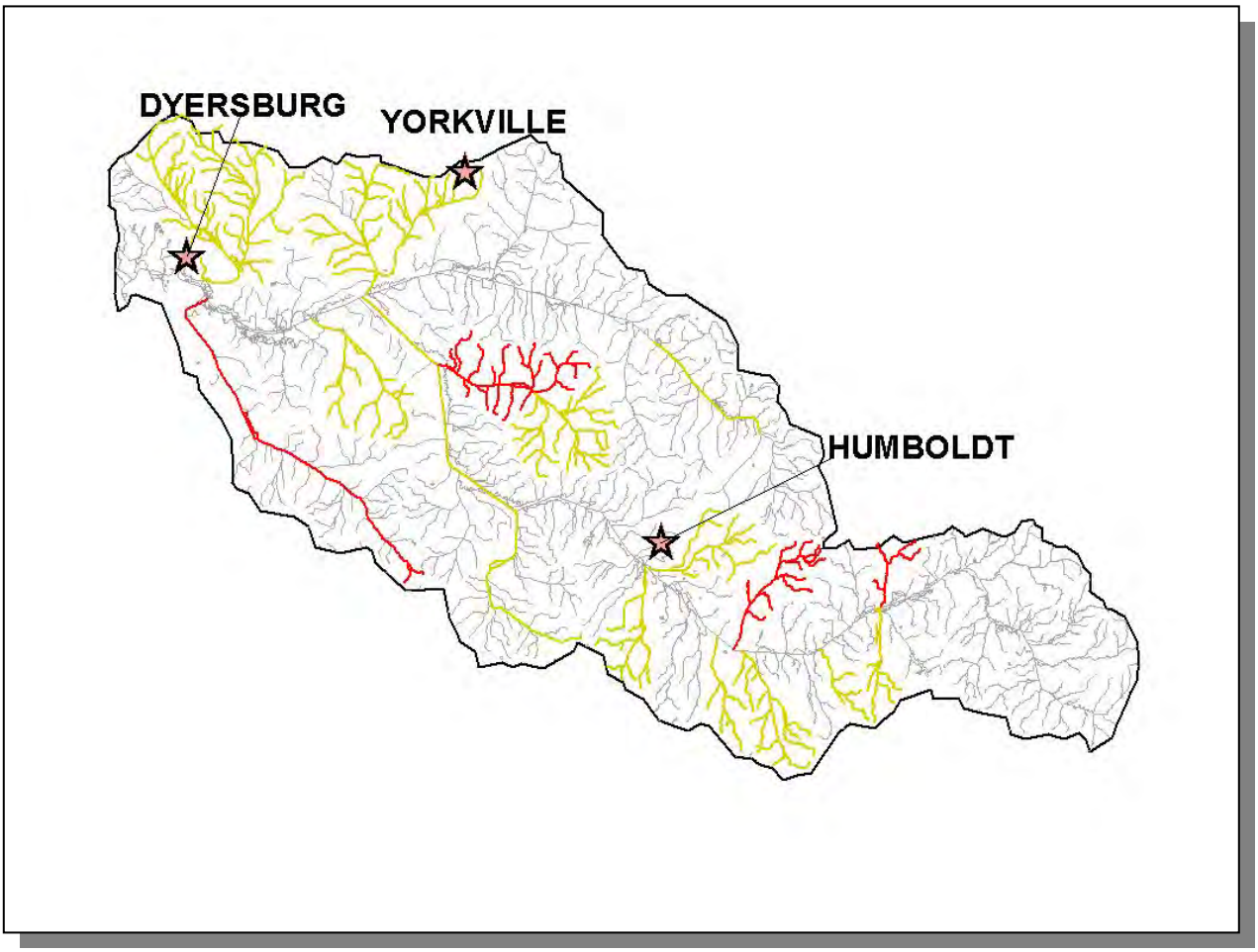



***Figure 3-7a. Impaired Streams Due to Habitat Alteration in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment; Yellow, Partially Supports designated Use; Red, Does Not Support Designated Use; Dyersburg, Humboldt, and Yorkville are shown for reference. More information is provided in NFFD-Appendix III.*

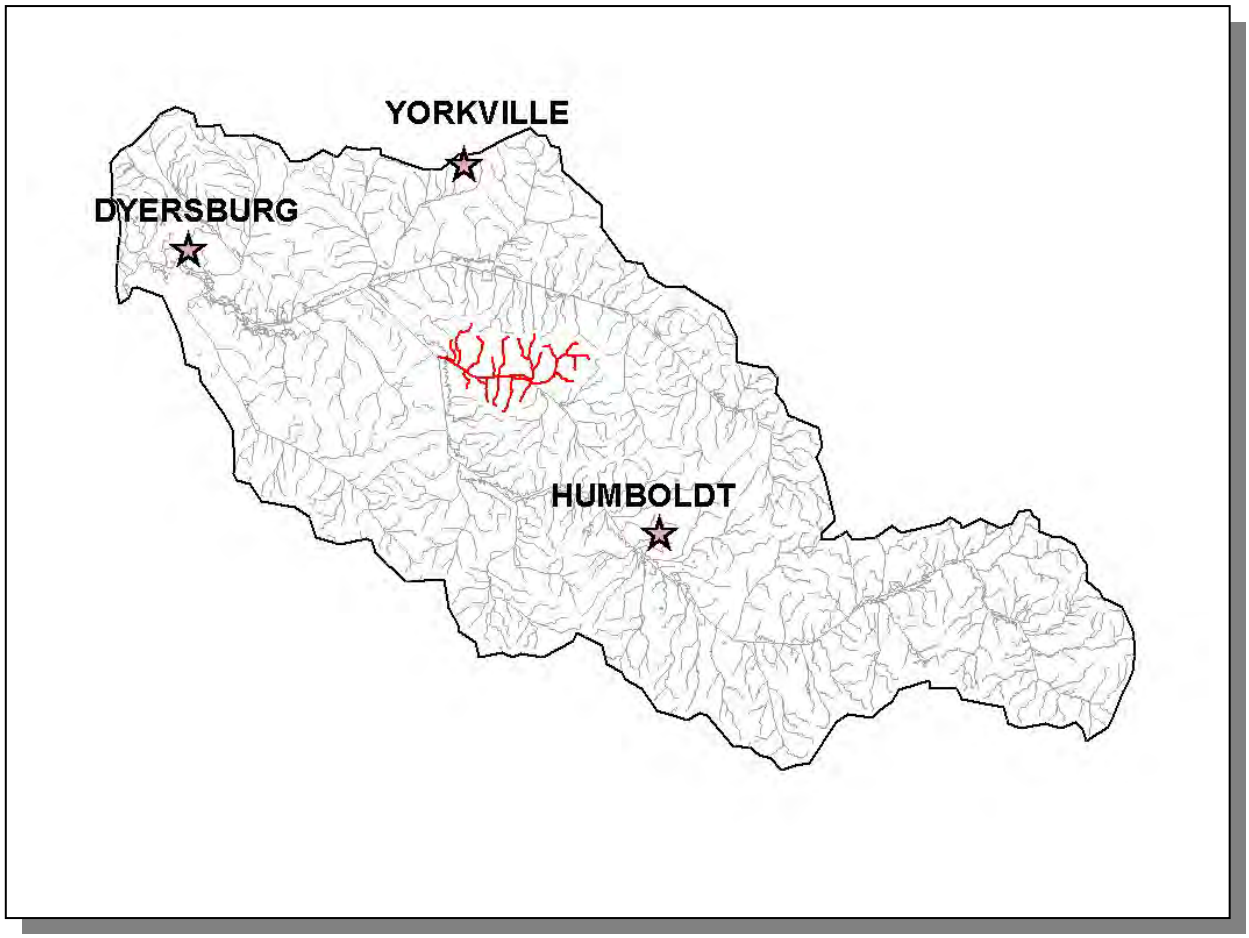



***Figure 3-7b. Impaired Streams Due to Organic enrichment/Low Dissolved Oxygen in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Yellow, Partially Supports designated Use; Red, Does Not Support Designated Use; Dyersburg, Humboldt, and Yorkville are shown for reference. More information is provided in NFFD-Appendix III.*

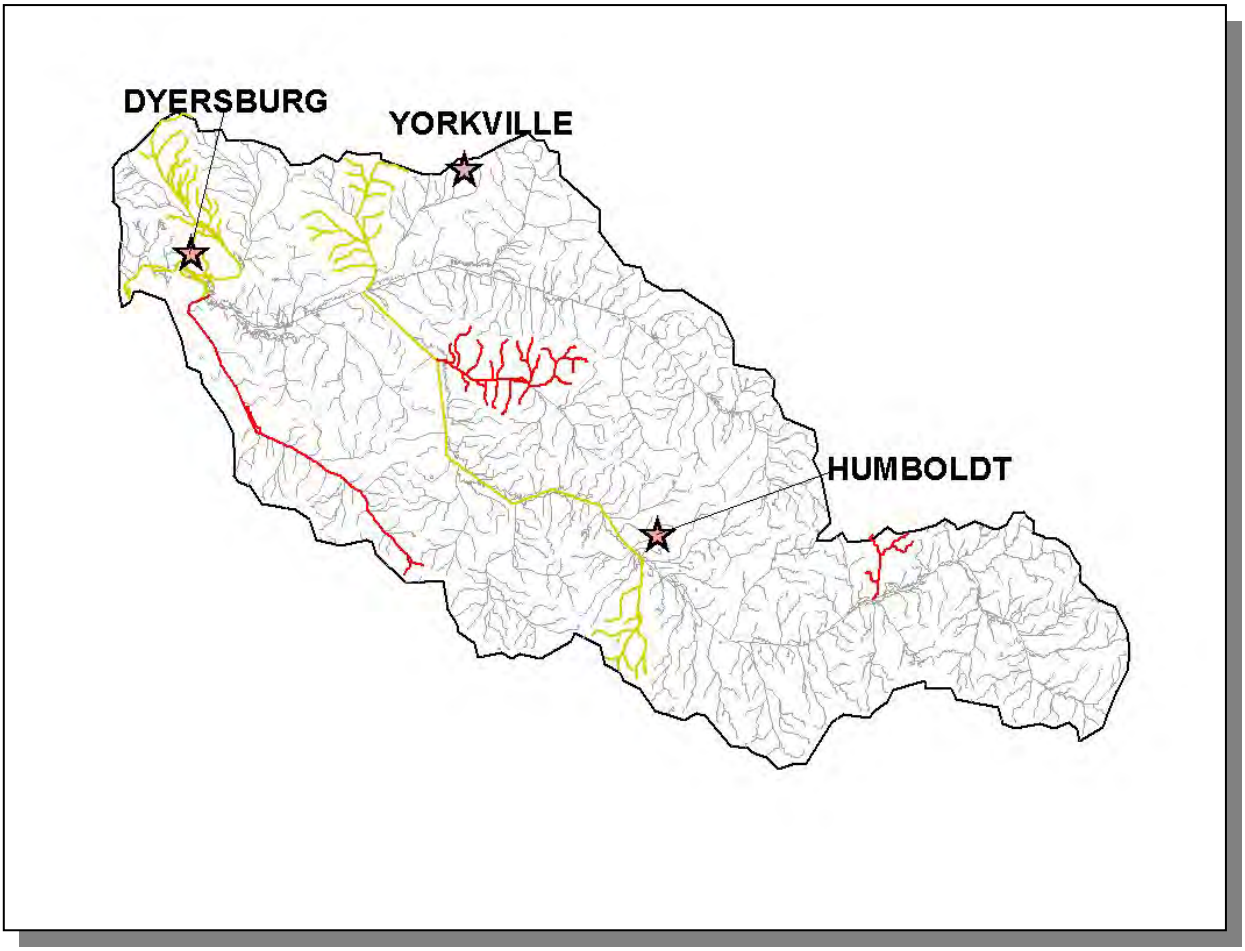



***Figure 3-7c. Impaired Streams Due to Pathogens in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Yellow, Partially Supports Designated Use; Red, Does Not Support Designated Use; Dyersburg, Humboldt, and Yorkville are shown for reference. More information is provided in NFFD-Appendix III.*

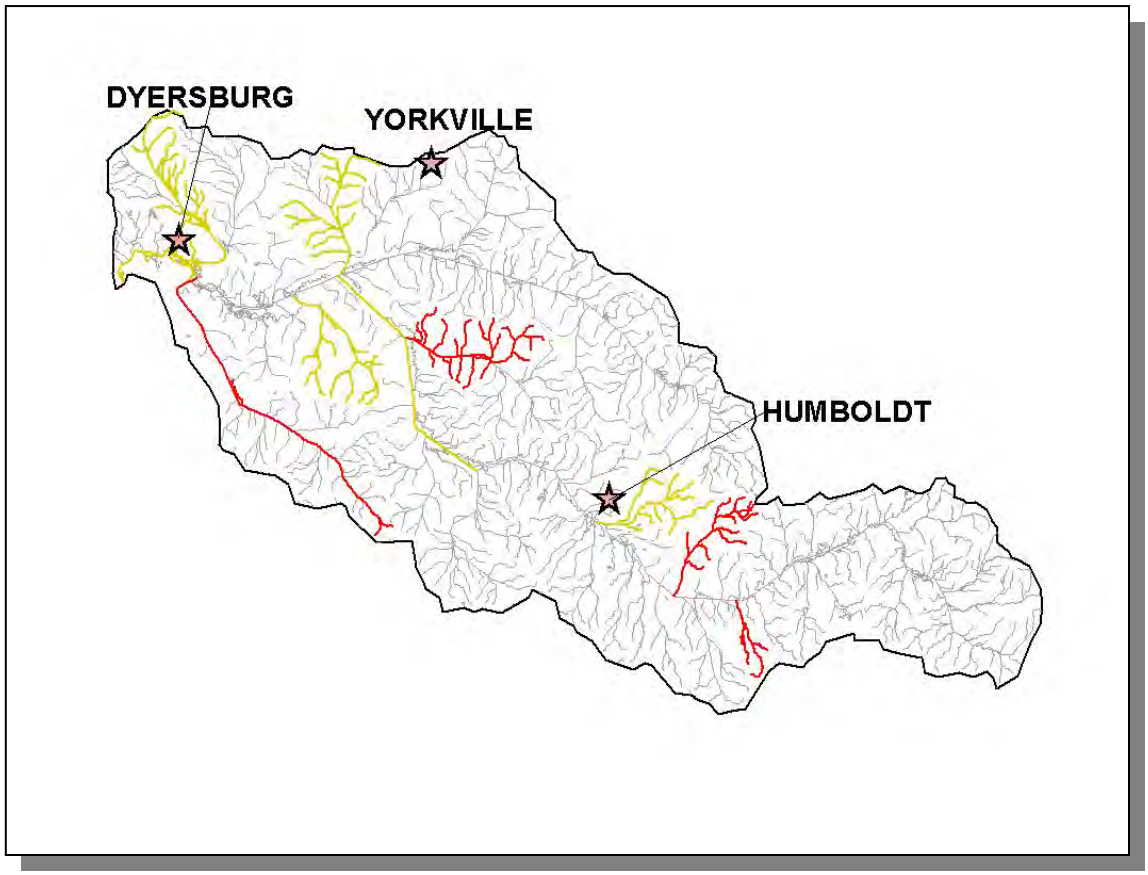



***Figure 3-7d. Impaired Streams Due to Siltation in the North Fork Forked Deer River Watershed.*** *Assessment data are based on the 2000 Water Quality Assessment. Yellow, Partially Supports Designated Use; Red, Does Not Support Designated Use; Dyersburg, Humboldt, and Yorkville are shown for reference. More information is provided in NFFD-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

In the year 2002 and beyond, the 303(d) list will be 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, Summary maps of each watershed may be viewed at http://www.state.tn.us/environment/wpc/watershed/mapsummary.htm.

**3.4. FLUVIAL GEOMORPHOLOGY.** Stream width, depth, and cross-sectional dimensions at bankful discharge are key parameters used in characterizing the shape and stability of rivers. Characterization of streams using the fluvial geomorphic stream classification system, which allows prediction of stream stability and physical evolution, is a valuable management tool (Rosgen, 1996).

A fluvial geomorphic curve illustrates relationships between drainage area, bankful dimensions of width, depth and cross-sectional area, and bankful discharge of stream systems that are in dynamic equilibrium. It is a tool to evaluate and predict the physical impacts of channel modifications, flow alterations, and other watershed changes, as well as determining appropriate physical parameters for stream and riparian restoration. Regional curves have been developed and applied in various regions of the country since the mid-1970's (Dunne and Leopold, 1978).

There are several benefits to using regional curves:

- Serving as a valuable regional-specific database for watershed management
- Providing an unbiased, scientific evaluation of the environmental impacts of proposed ARAP and other permitted activities
- Providing a scientific foundation for evaluating and documenting long-term geomorphic and hydrologic changes in the region
- Quantifying environmental impacts
- Suggesting the best approach to restore streams that have been modified

Ultimately, a regional curve will be created that illustrates the relationship between bankful width and drainage area.

# CHAPTER 4

## POINT AND NONPOINT SOURCE CHARACTERIZATION OF THE NORTH FORK FORKED DEER 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 1998 303(d) list
iii. Description of nonpoint source contributions

The north Fork Forked Deer River Watershed (HUC 08010204) has been delineated into four 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 1.1 beta (developed by Tetra Tech, Inc for EPA Region 4) released in 2000.

WCS integrates with ArcView® v3.2 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.

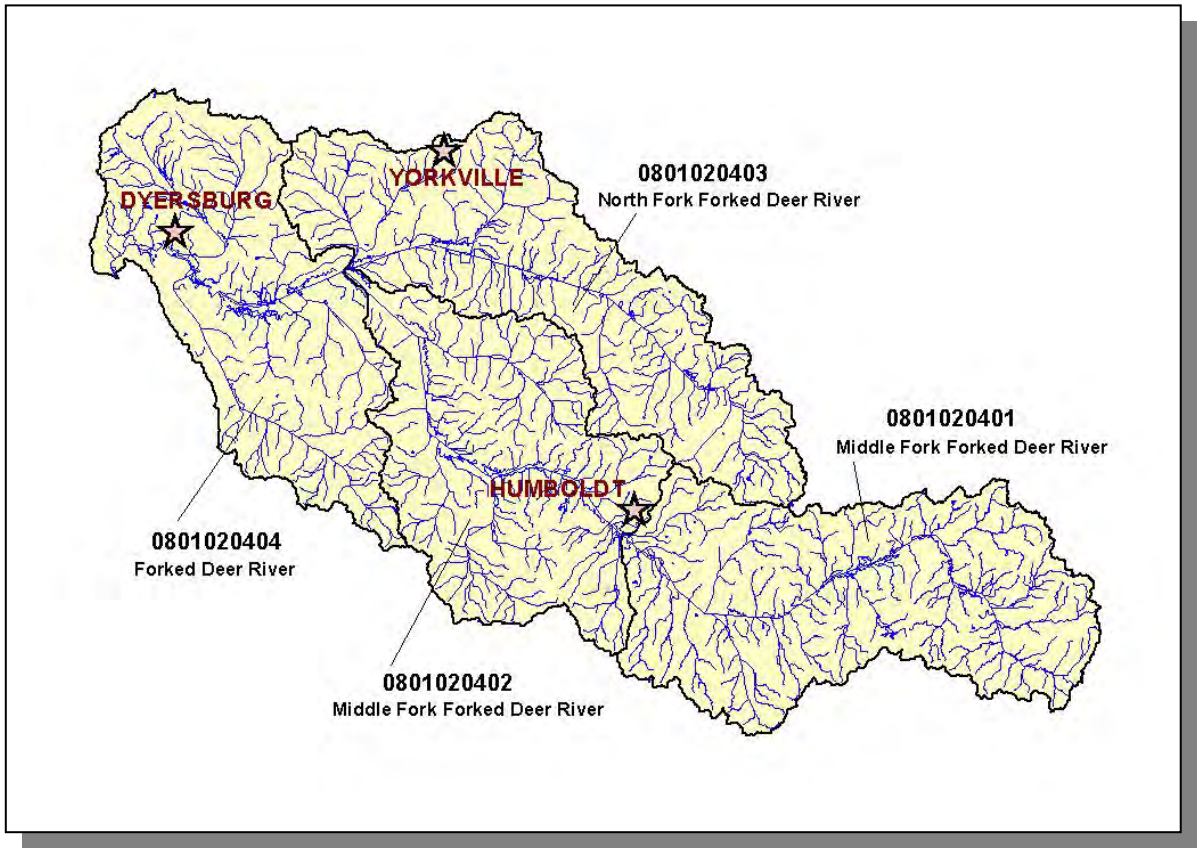



***Figure 4-1. The North Fork Forked Deer River Watershed is Composed of Four USGS-Delineated Subwatersheds (10-Digit Subwatersheds).*** *Locations of Dyersburg, Humboldt, and Yorkville are shown for reference.*

**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 North Fork Forked Deer River Watershed.

| HUC-10 | HUC-12 |
|---|---|
| 0801020401 | 080102040101 (Middle Fork Forked Deer River) |
| | 080102040102 (Middle Fork Forked Deer River) |
| | 080102040103 (Middle Fork Forked Deer River) |
| | 080102040104 (Middle Fork Forked Deer River) |
| | 080102040105 (Middle Fork Forked Deer River) |
| | |
| 0801020402 | 080102040201 (Middle Fork Forked Deer River) |
| | 080102040202 (Cypress Creek) |
| | 080102040203 (Middle Fork Forked Deer River) |
| | 080102040204 (Buck Creek) |
| | |
| 0801020403 | 080102040301 (North Fork Forked Deer River) |
| | 080102040302 (North Fork Forked Deer River) |
| | 080102040303 (Cain Creek) |
| | 080102040304 (Mud Creek) |
| | 080102040305 (North Fork Forked Deer River) |
| | 080102040306 (Doakville Creek) |
| | |
| 0801020404 | 080102040401 (Forked Deer River) |
| | 080102040402 (Forked Deer River) |
| | 080102040403 (Pond Creek) |
| | 080102040404 (Lewis 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. 0801020401.

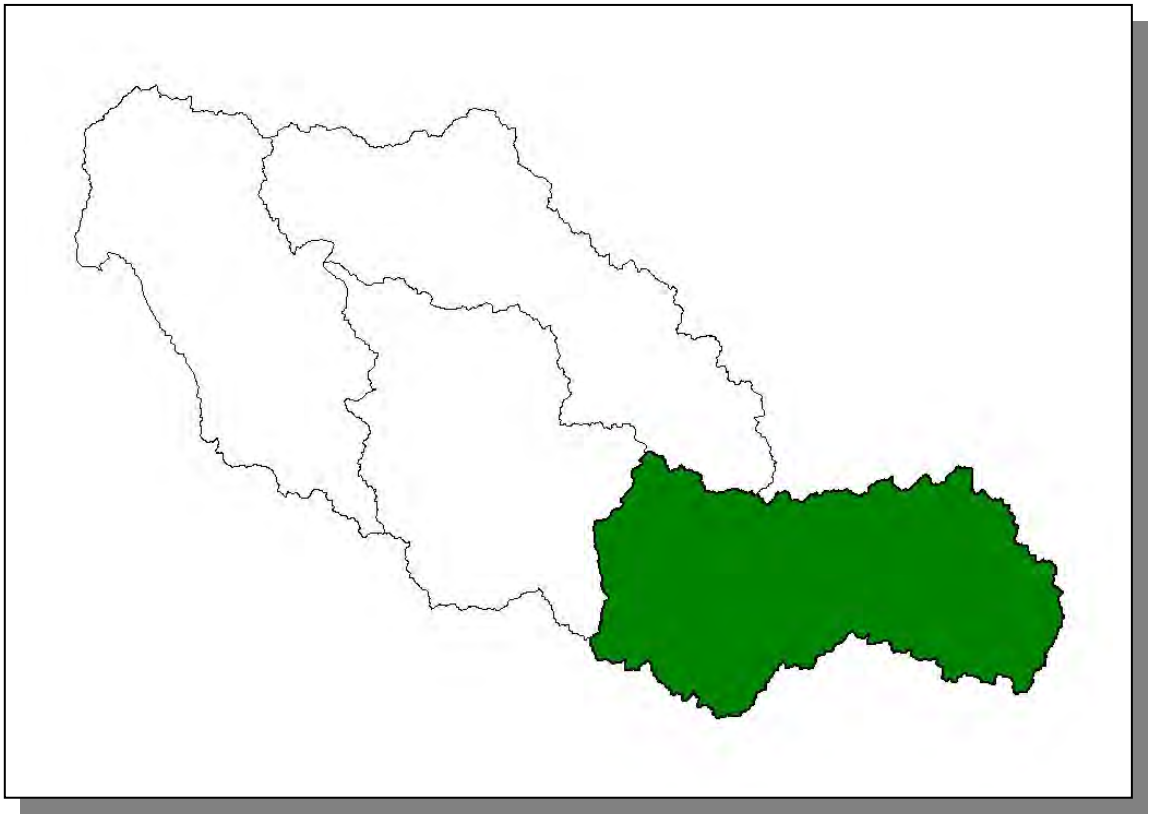


***Figure 4-2. Location of Subwatershed 0801020401.*** *All North Fork Forked Deer River HUC-10 subwatershed boundaries are shown for reference.*

4.2.A.i. General Description.

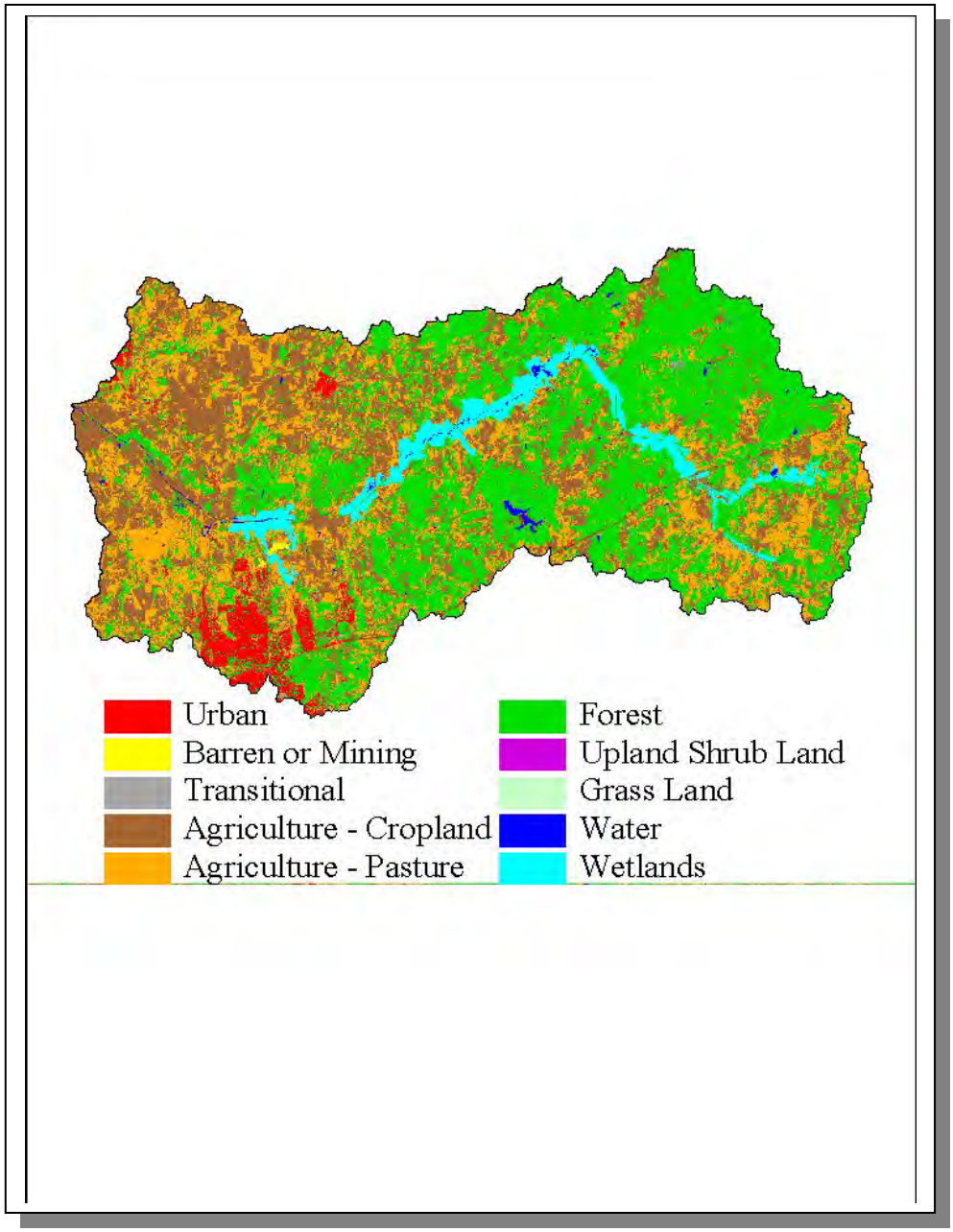



***Figure 4-3. Illustration of Land Use Distribution in Subwatershed 0801020401.***

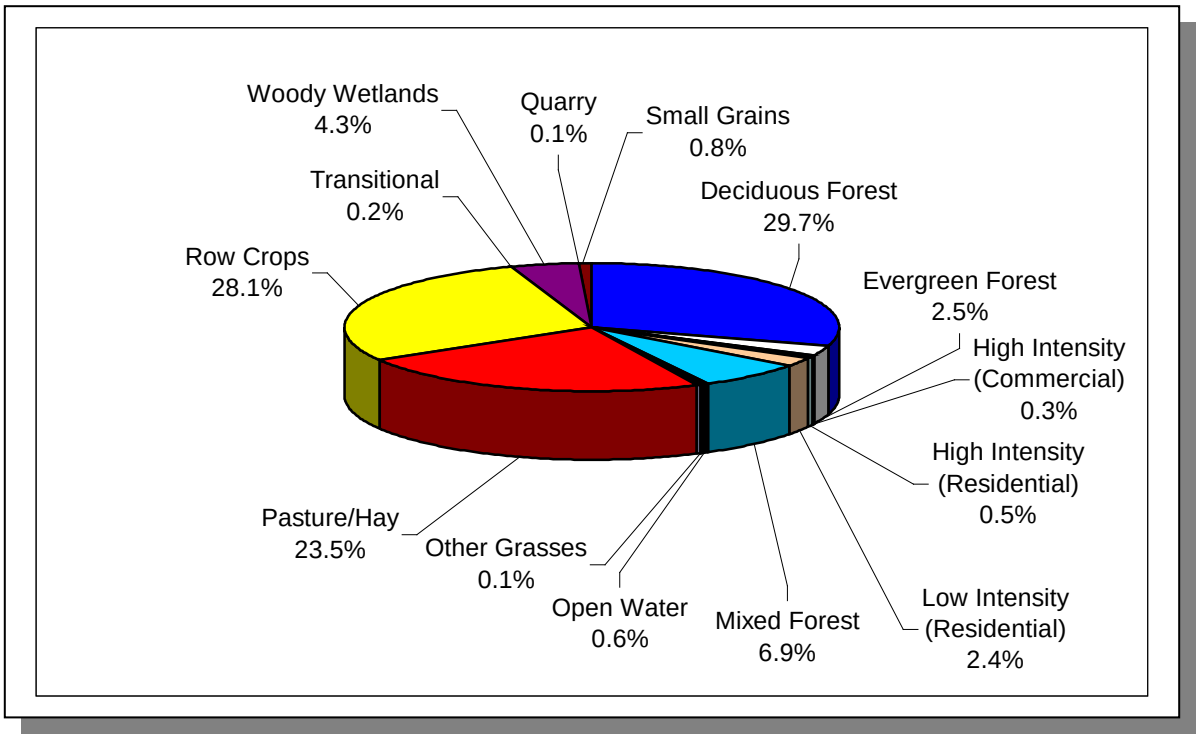



***Figure 4-4. Land Use Distribution in Subwatershed 0801020401.*** *More information is provided in NFFD-Appendix IV.*

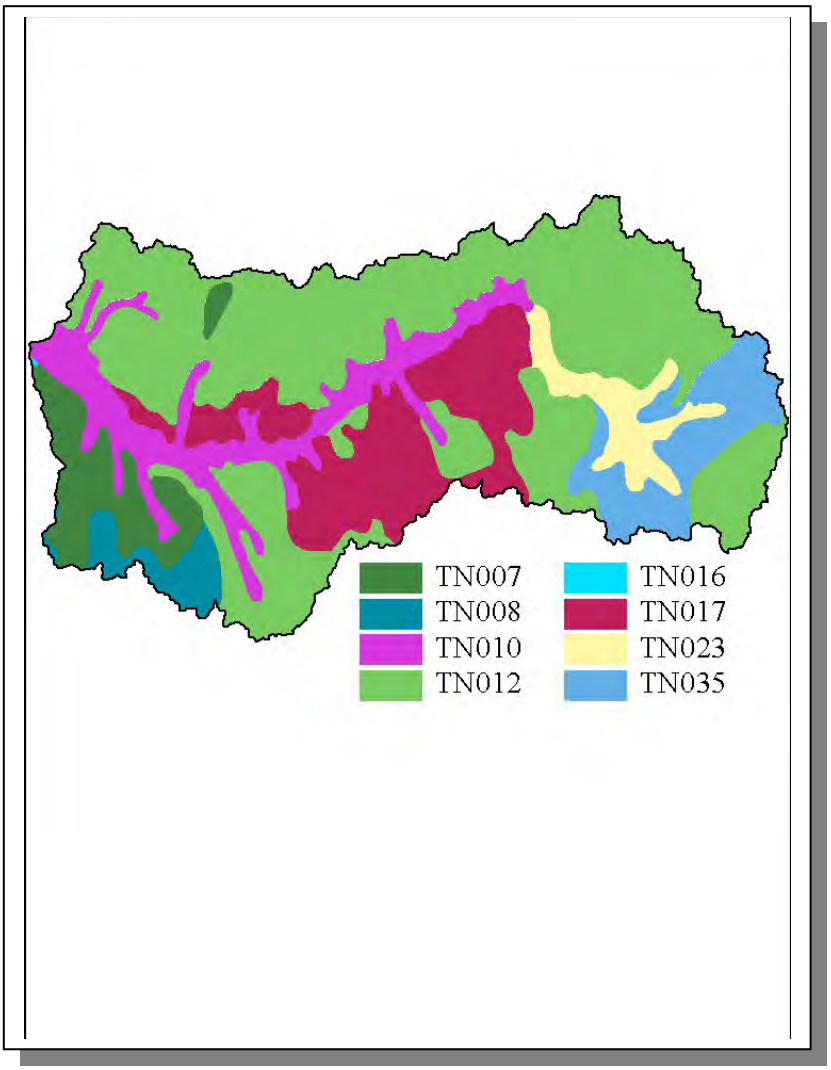



***Figure 4-5. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020401.***

| STATSGO MAP UNIT ID | PERCENT HYDRIC | HYDROLOGIC GROUP | PERMEABILITY (in/hour) | SOIL pH | ESTIMATED SOIL TEXTURE | SOIL ERODIBILITY |
|---|---|---|---|---|---|---|
| TN007 | 29.00 | C | 1.30 | 5.36 | Silty Loam | 0.48 |
| TN008 | 2.00 | C | 1.38 | 5.20 | Silty Loam | 0.48 |
| TN010 | 81.00 | C | 1.33 | 5.11 | Silty Loam | 0.44 |
| TN012 | 1.00 | C | 2.52 | 5.13 | Silty Loam | 0.39 |
| TN016 | 0.00 | C | 1.30 | 6.47 | Silty Loam | 0.44 |
| TN017 | 0.00 | B | 1.81 | 5.26 | Silty Loam | 0.45 |
| TN023 | 17.00 | C | 1.35 | 5.12 | Silty Loam | 0.42 |
| TN035 | 16.00 | C | 1.46 | 4.97 | Silty Loam | 0.40 |

***Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020401.*** *More details are provided in NFFD-Appendix IV.*

| | COUNTY POPULATION | | | ESTIMATED POPULATION IN WATERSHED | | % CHANGE |
|---|---|---|---|---|---|---|
| County | 1990 | 1997 Est. | Portion of Watershed (%) | 1990 | 1997 | |
| | | | | | | |
| Carroll | 27,514 | 28,990 | 4.06 | 1,117 | 1,177 | 5.4 |
| Crockett | 13,378 | 13,841 | 0.71 | 94 | 89 | 4.3 |
| Gibson | 46,315 | 48,083 | 5.05 | 2,340 | 2,429 | 3.8 |
| Henderson | 21,844 | 24,000 | 13.65 | 2,981 | 3,275 | 9.9 |
| Madison | 77,982 | 84,942 | 24.54 | 19,135 | 20,843 | 8.9 |
| **Totals** | **187,033** | **199,856** | | **25,667** | **27,822** | **8.4** |

***Table 4-3. Population Estimates in Subwatershed 0801020401.***

| | | | NUMBER OF HOUSING UNITS | | | |
|---|---|---|---|---|---|---|
| Populated Place | County | Population | Total | Public Sewer | Septic Tank | Other |
| | | | | | | |
| Humboldt | Madison | 9,634 | 3,992 | 3,878 | 110 | 4 |
| Jackson | Madison | 48,949 | 20,739 | 20,197 | 512 | 30 |
| Medina | Gibson | 658 | 335 | 330 | 5 | 0 |
| **Total** | | **59,241** | **25,066** | **24,405** | **627** | **34** |

***Table 4-4. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0801020401.***

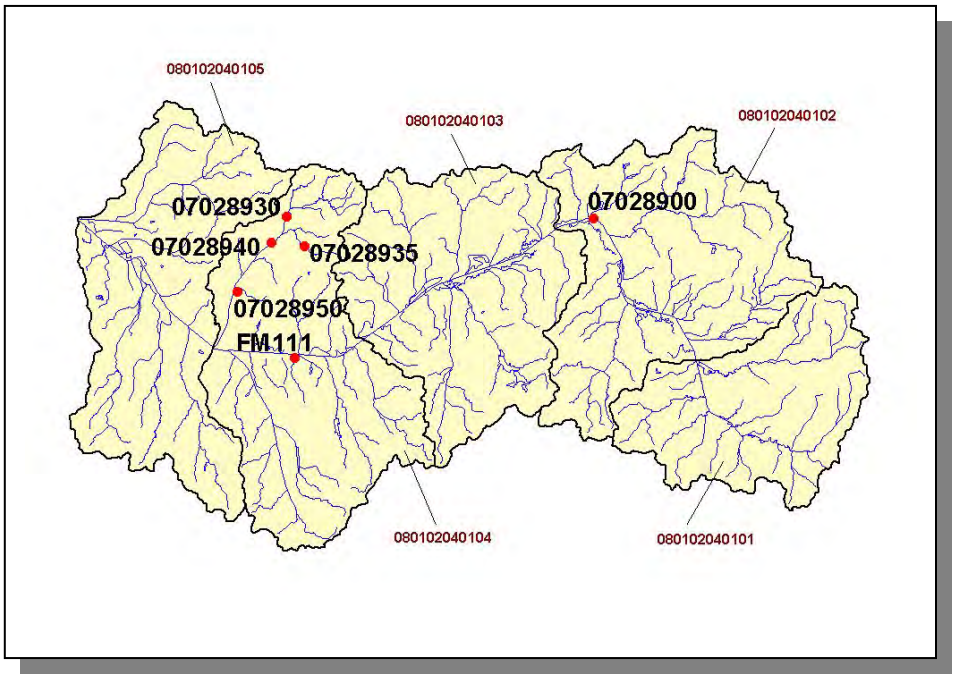



***Figure 4-6. Location of Historical Streamflow Data Collection Sites in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

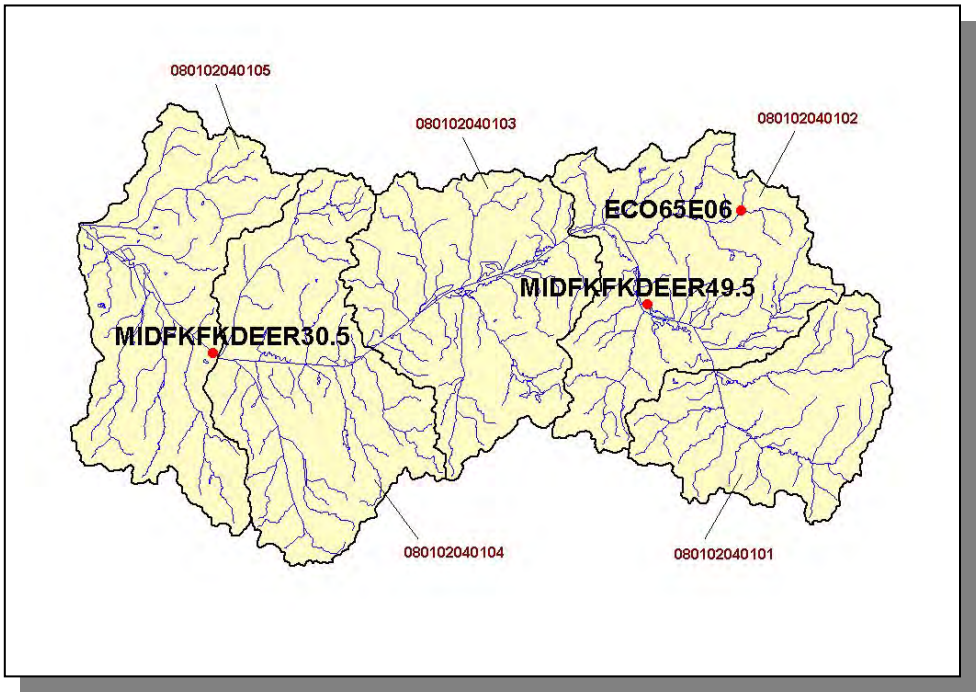



***Figure 4-7. Location of STORET Monitoring Sites in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

4.2.A.ii. Point Source Contributions.

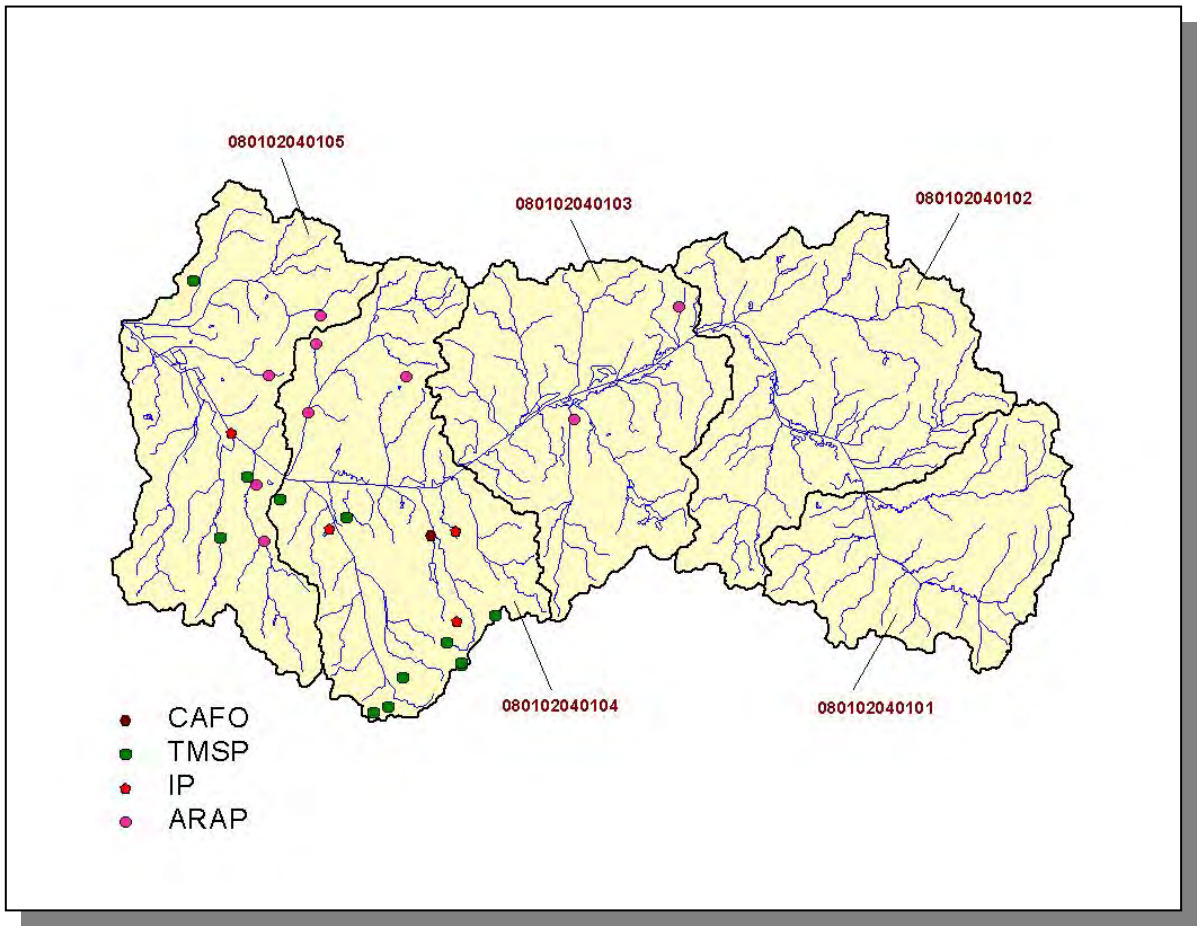



***Figure 4-8. Location of Active Point Source Facilities in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information is provided in the following figures.*

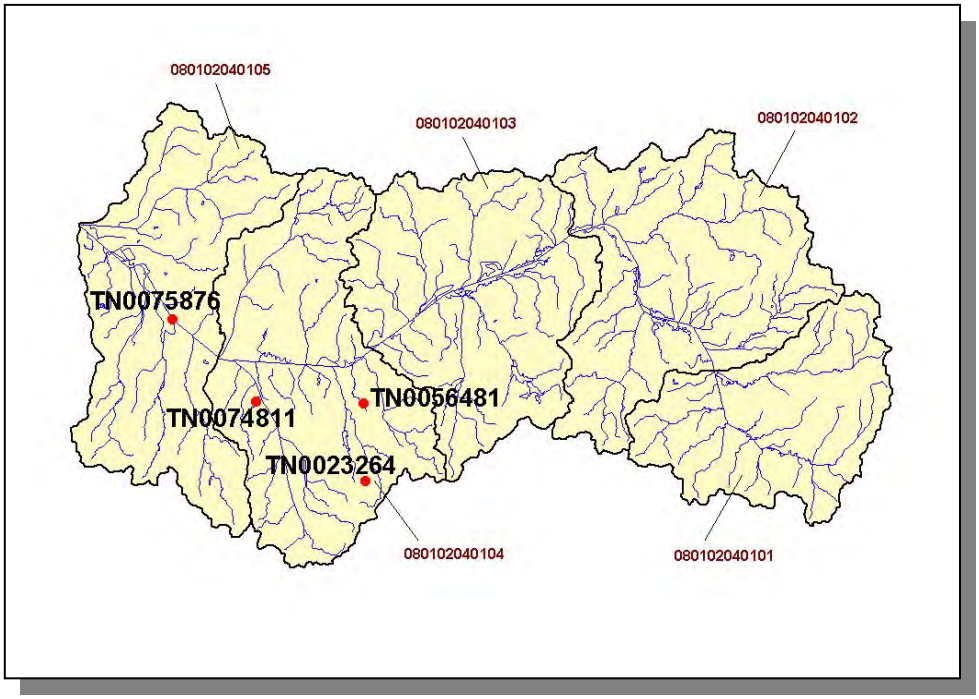



***Figure 4-9. Location of Active Point Source Facilities (Individual Permits) in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

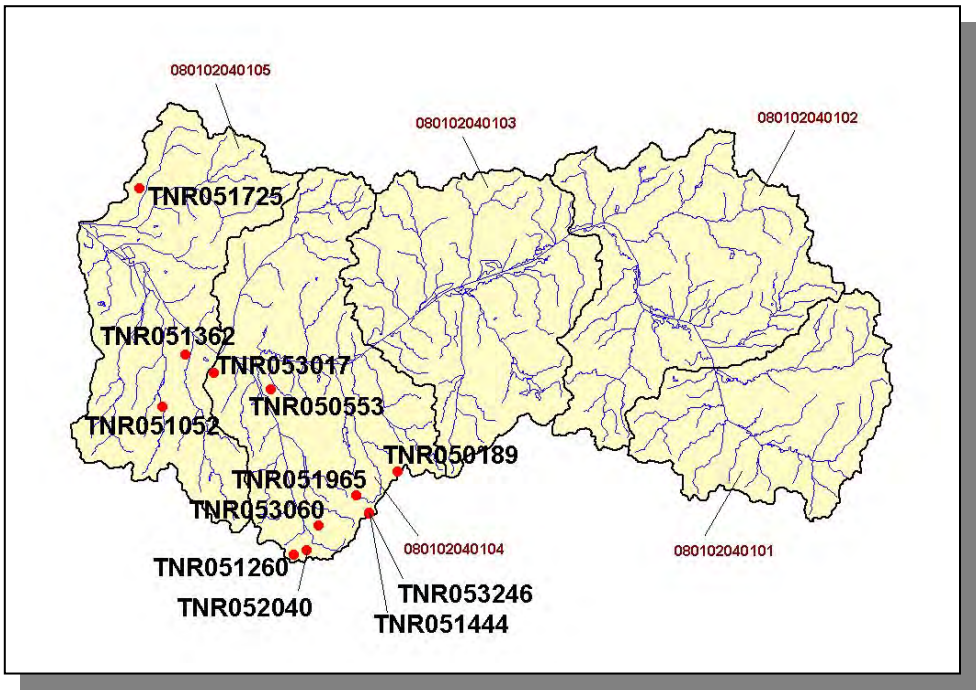



***Figure 4-10. Location of TMSP Facilities in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

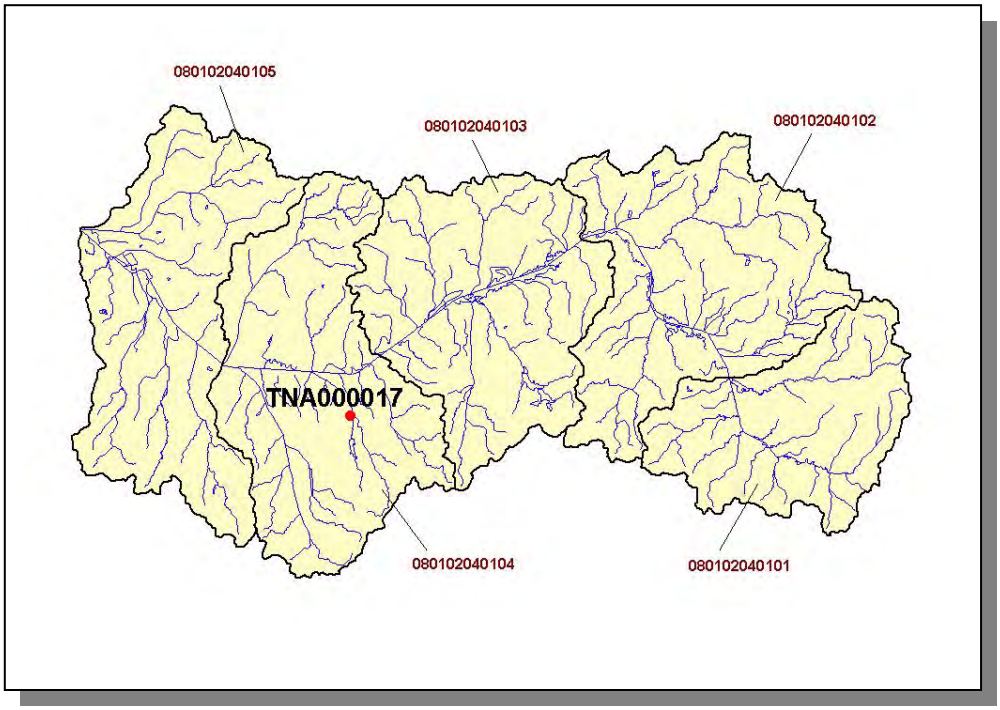



***Figure 4-11. Location of CAFO Facilities in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. CAFO rules may be found at http://cfpub.epa.gov/npdes/afo/cafofinalrule.cfm. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

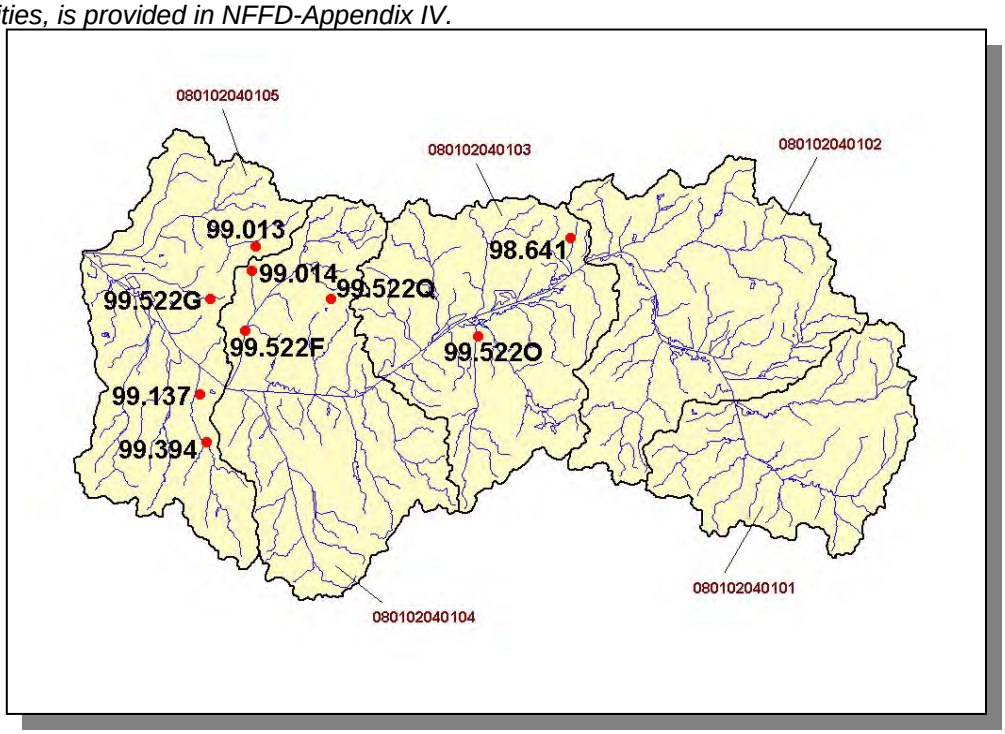



***Figure 4-12. Location of ARAP Sites (Individual Permits) in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

4.2.A.ii.a. Dischargers to Water Bodies Listed on the 1998 303(d) List

There are three NPDES facilities discharging to water bodies listed on the 1998 303(d) list in Subwatershed 0801020401:

- TN0023264 (Nova School) discharges to an unnamed trib to Johnson Creek @ RM 4.4
- TN0074811 (Ameristeel) discharges to Dyer Creek @ RM 1.5, and to unnamed trib to Middle Fork Forked Deer River @ RM 32.5
- TN0075876 (Middle Fork STP) discharges to Middle Fork Forked Deer River @ RM 29.1

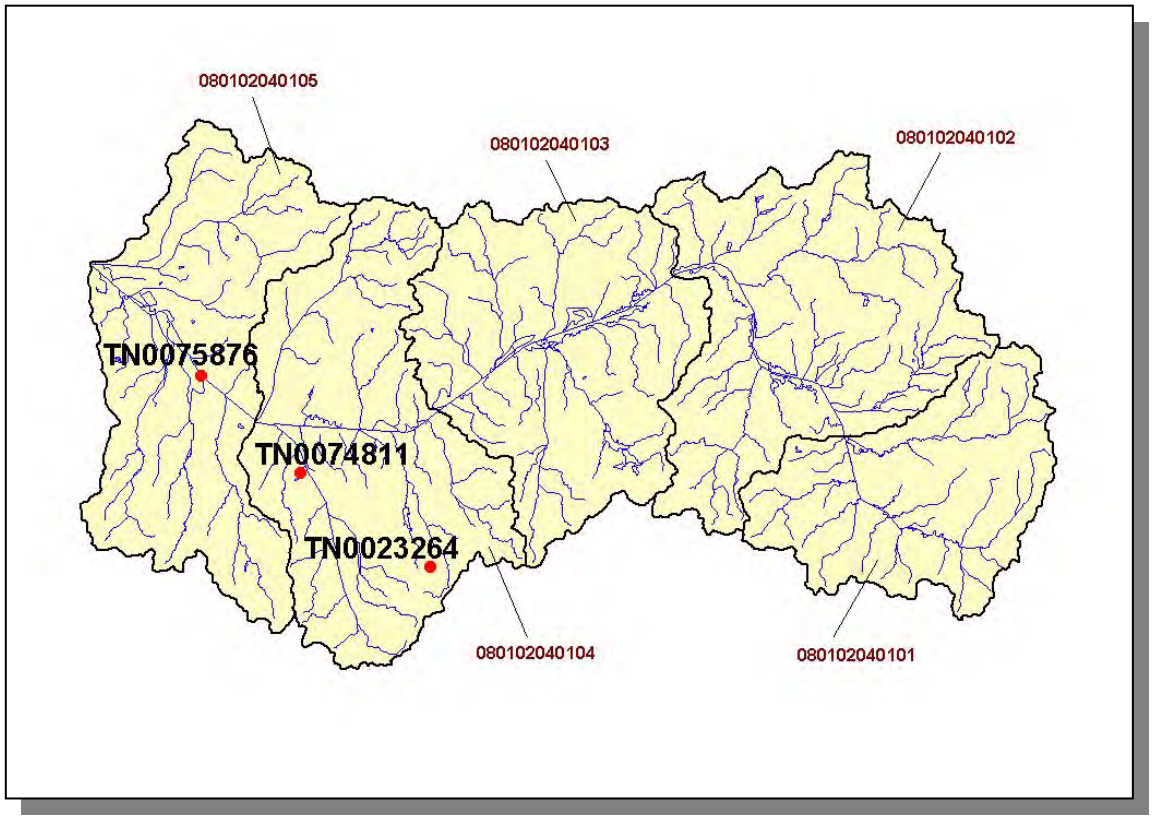



***Figure 4-13. Location of NPDES Dischargers to Water Bodies Listed on the 1998 303(d) List in Subwatershed 0801020401.*** *Subwatershed 080102040101, 080102040102, 080102040103, 080102040104, and 080102040105 boundaries are shown for reference. The names of facilities are provided in NFFD-Appendix IV.*

| PERMIT # | 1Q10 | 3Q10 | 7Q10 | 3Q20 | QDESIGN |
|---|---|---|---|---|---|
| TN0023264 | | | 0.00 | | 0.01200 |
| TN0074811 | | | | | 0.47000 |
| TN0075876 | 21.91 | 22.43 | 23.01 | 20.81 | 4.00000 |

***Table 4-5. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020401.*** *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 # | $CBOD_5$ | pH | WET | $NH_3$ | FECAL | Fe | TRC | SETTLEABLE SOLIDS | OIL and GREASE | TSS | DO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TN0023264 | X | X | | X | X | | X | X | | X | X |
| TN0074811 | | X | X | | | X | X | | X | X | |
| TN0075876 | X | X | X | X | X | | X | X | | X | X |

***Table 4-6. Parameters Monitored for Daily Maximum (mg/L) Limits for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020401.*** *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); WET, Whole Effluent Toxicity; TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

4.2.A.iii. Nonpoint Source Contributions.

| LIVESTOCK (COUNTS) | | | | | | |
|---|---|---|---|---|---|---|
| Beef Cow | Cattle | Milk Cow | Chickens | Chickens Sold | Hogs | Sheep |
| | | | | | | |
| 3,880 | 13,829 | 33 | 12 | 0 | 7,306 | 49 |

***Table 4-7. Summary of Livestock Count Estimates in Subwatershed 0801020401.*** *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 |
| Crockett | 15.1 | 15.1 | 0.3 | 1.6 |
| Gibson | 36.4 | 36.4 | 2.0 | 8.6 |
| Henderson | 158.5 | 158.5 | 3.6 | 12.8 |
| **Totals** | **379.1** | **379.1** | **6.5** | **25.0** |

***Table 4-8. Forest Acreage and Annual Removal Rates (1987-1994) in Subwatershed 0801020401.***

| CROPS | TONS/ACRE/YEAR |
|---|---|
| Corn (Row Crops) | 11.47 |
| Soybeans (Row Crops) | 8.18 |
| Sorghum (Row Crops) | 6.38 |
| Cotton (Row Crops) | 10.90 |
| Grass (Hayland) | 0.56 |
| Legume (Hayland) | 0.07 |
| Grass (Pastureland) | 0.52 |
| Grass,Forbs, Legumes (Mixed Pasture) | 2.29 |
| Forest Land (Not Grazed) | 0.00 |
| All Other Close Grown Cropland | 0.47 |
| Other Vegetable and Truck Crops | 7.81 |
| Conservation Reserve Program Land | 0.51 |
| Other Land in Farms | 0.35 |
| Other Cropland (Not Planted) | 3.93 |
| Nonagricultural Land Use | 0.00 |
| Farmsteads and Ranch Headquarters | 0.51 |

***Table 4-9. Annual Estimated Total Soil Loss in Subwatershed 0801020401.***

4.2.B. 0801020402.

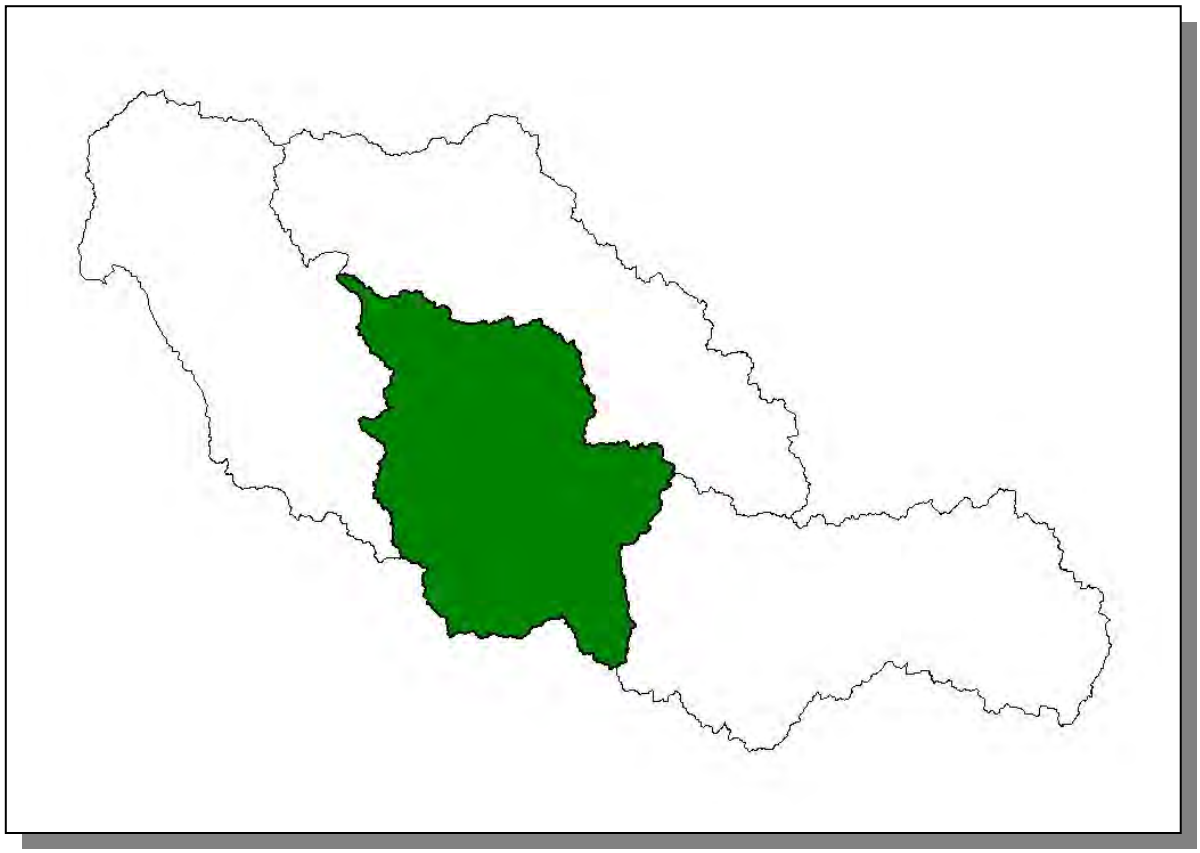


***Figure 4-14. Location of Subwatershed 0801020402.*** *All North Fork Forked Deer HUC-10 subwatershed boundaries are shown for reference.*

4.2.B.i. General Description.

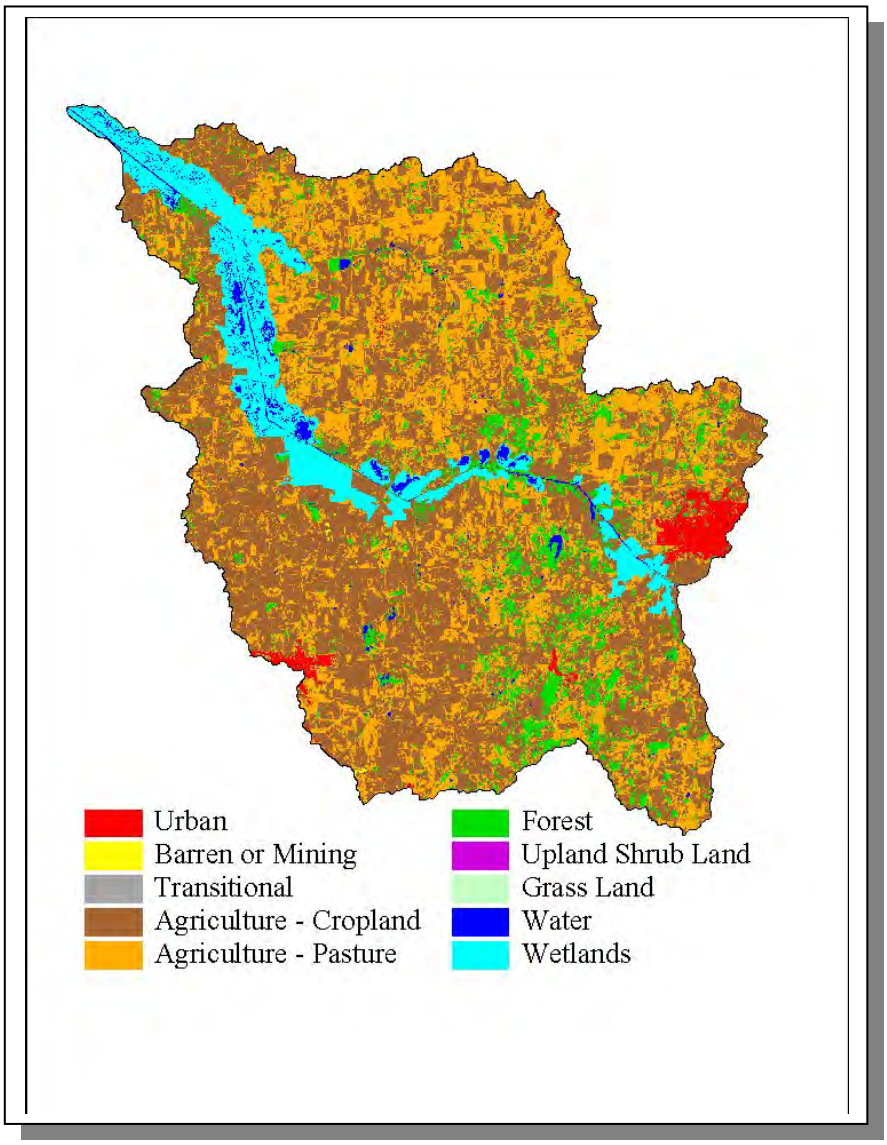



***Figure 4-15. Illustration of Land Use Distribution in Subwatershed 0801020402.***

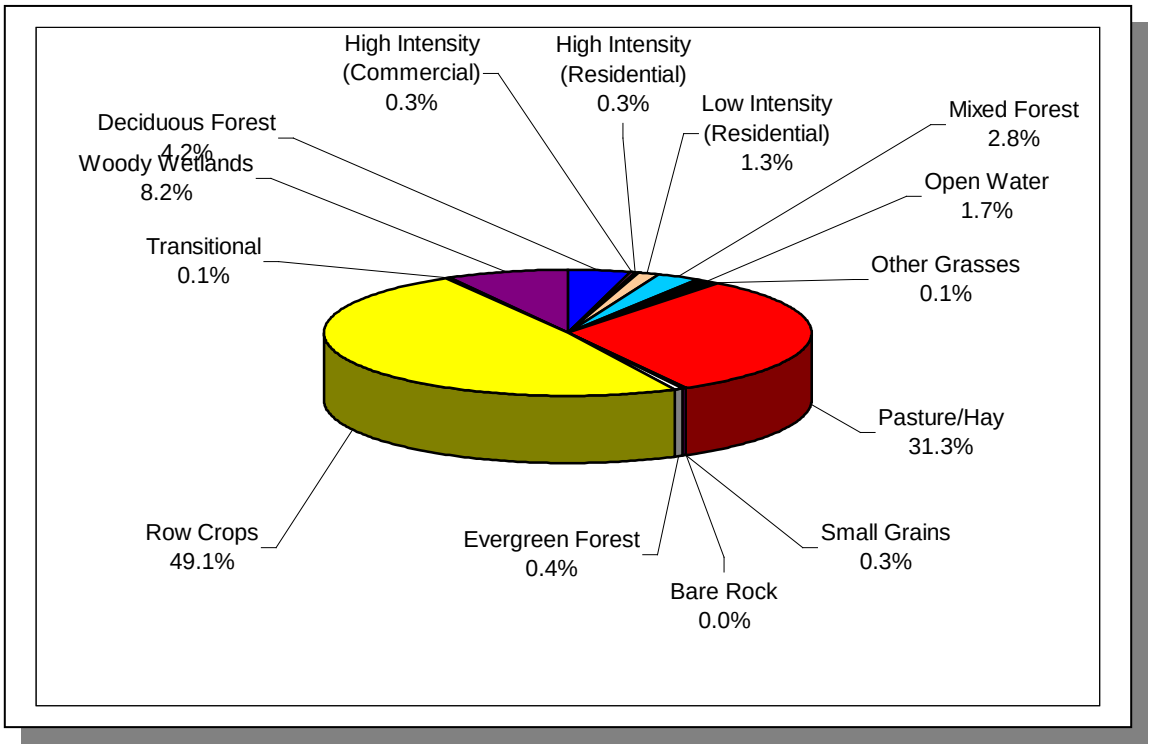



***Figure 4-16. Land Use Distribution in Subwatershed 0801020402.*** *More information is provided in NFFD-Appendix IV.*

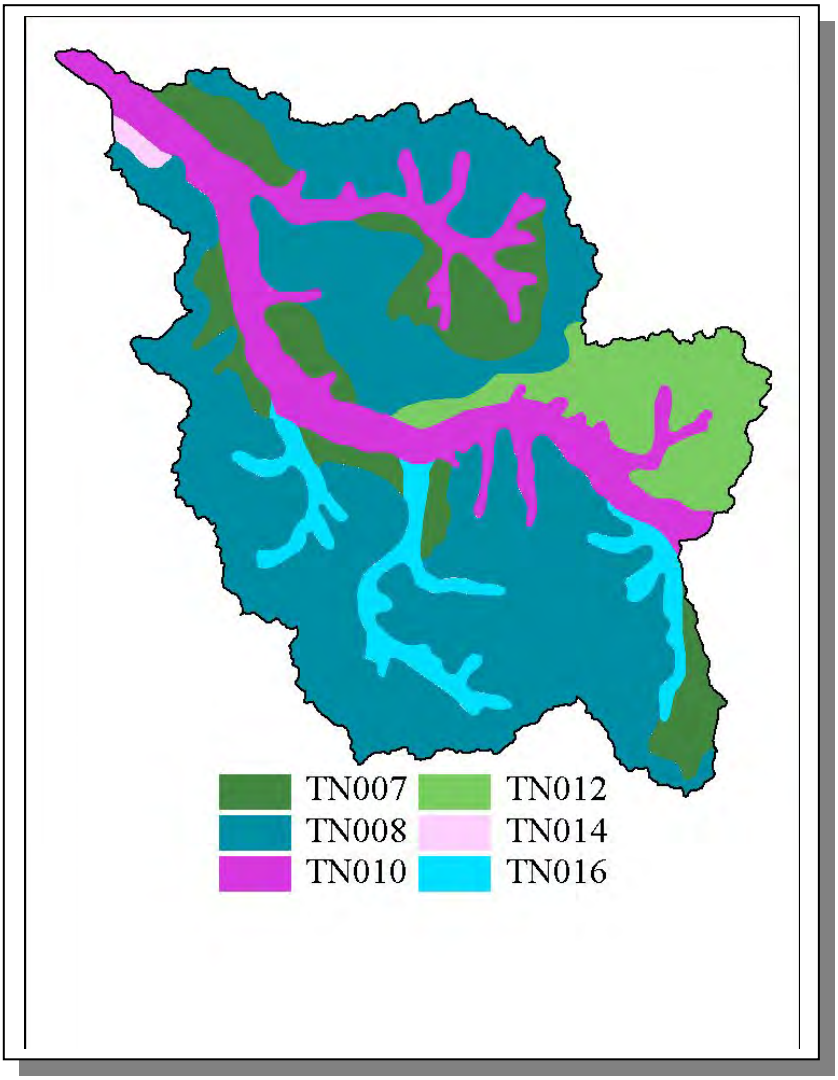



***Figure 4-17. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020402.***

| STATSGO MAP UNIT ID | PERCENT HYDRIC | HYDROLOGIC GROUP | PERMEABILITY (in/hour) | SOIL pH | ESTIMATED SOIL TEXTURE | SOIL ERODIBILITY |
|---|---|---|---|---|---|---|
| TN007 | 29.00 | C | 1.30 | 5.36 | Silty Loam | 0.48 |
| TN008 | 2.00 | C | 1.38 | 5.20 | Silty Loam | 0.48 |
| TN010 | 81.00 | C | 1.33 | 5.11 | Silty Loam | 0.44 |
| TN012 | 1.00 | C | 2.52 | 5.13 | Silty Loam | 0.39 |
| TN014 | 30.00 | C | 1.30 | 5.12 | Silty Loam | 0.47 |
| TN016 | 0.00 | C | 1.30 | 6,47 | Silty Loam | 0.44 |

***Table 4-10. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020402.*** *More information is provided in NFFD-Appendix IV.*

| | COUNTY POPULATION | | | ESTIMATED POPULATION IN WATERSHED | | PERCENT CHANGE |
|---|---|---|---|---|---|---|
| County | 1990 | 1997 Est. | Portion of Watershed (%) | 1990 | 1997 | |
| | | | | | | |
| Crockett | 13,378 | 13,841 | 42.34 | 5,664 | 5,860 | 3.5 |
| Dyer | 34,854 | 36,465 | 0.13 | 46 | 48 | 4.3 |
| Gibson | 46,315 | 48,083 | 16.85 | 7,804 | 8,102 | 3.8 |
| Madison | 77,982 | 84,942 | 1.21 | 941 | 1,025 | 8.9 |
| **Total** | **172,529** | **183,331** | | **15.455** | **15,035** | **4.0** |

***Table 4-11. Population Estimates in Subwatershed 0801020402.***

| | | | NUMBER OF HOUSING UNITS | | | |
|---|---|---|---|---|---|---|
| Populated Place | County | Population | Total | Public Sewer | Septic Tank | Other |
| | | | | | | |
| Alamo | Crockett | 2,400 | 1,044 | 1,001 | 43 | 0 |
| Bells | Crockett | 1,643 | 676 | 651 | 21 | 4 |
| Gadsden | Crockett | 587 | 219 | 9 | 207 | 3 |
| Humboldt | Gibson | 9,634 | 3,992 | 3,878 | 110 | 4 |
| **Total** | | **14,264** | **5,931** | **5,539** | **381** | **11** |

***Table 4-12. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0801020402.***

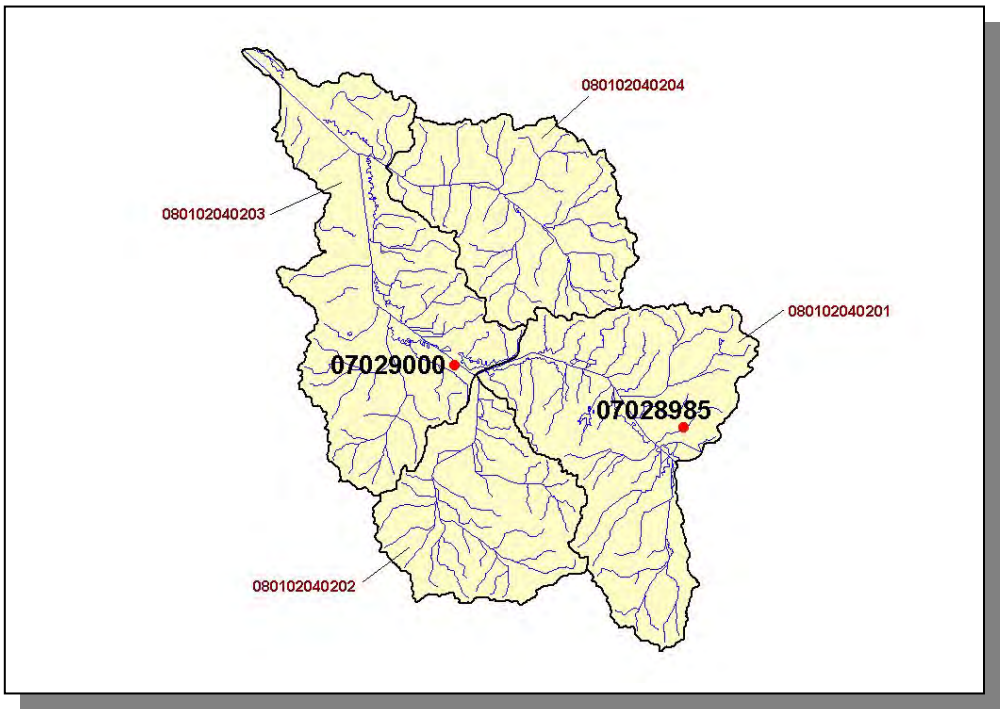



***Figure 4-18. Location of Historical Streamflow Data Collection Sites in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

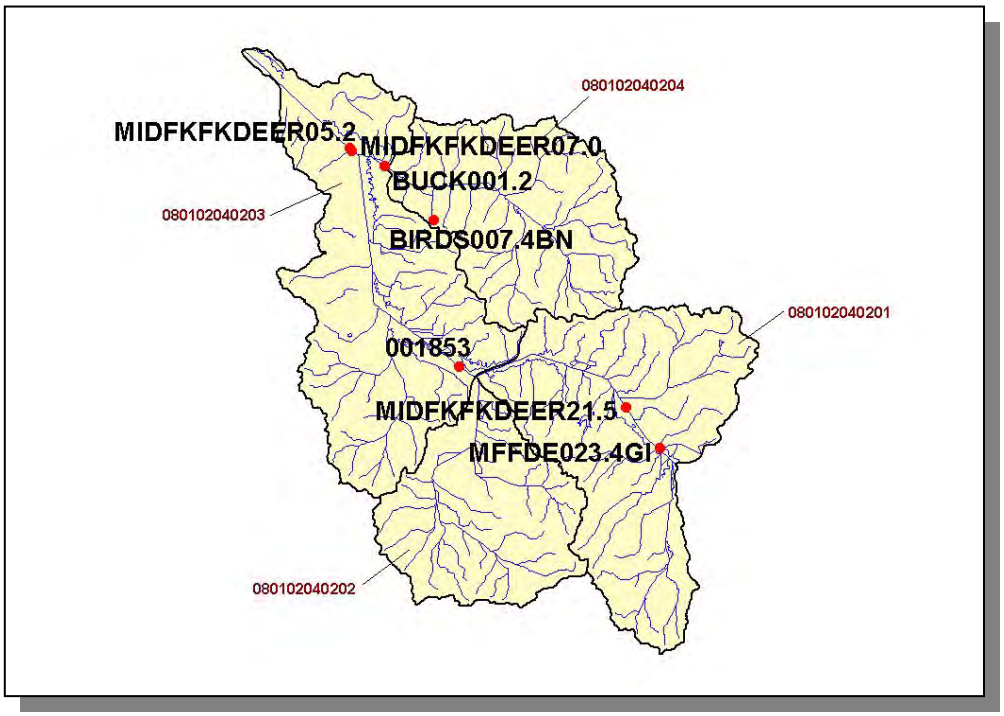



***Figure 4-19. Location of STORET Monitoring Sites in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

4.2.B.ii. Point Source Contributions.

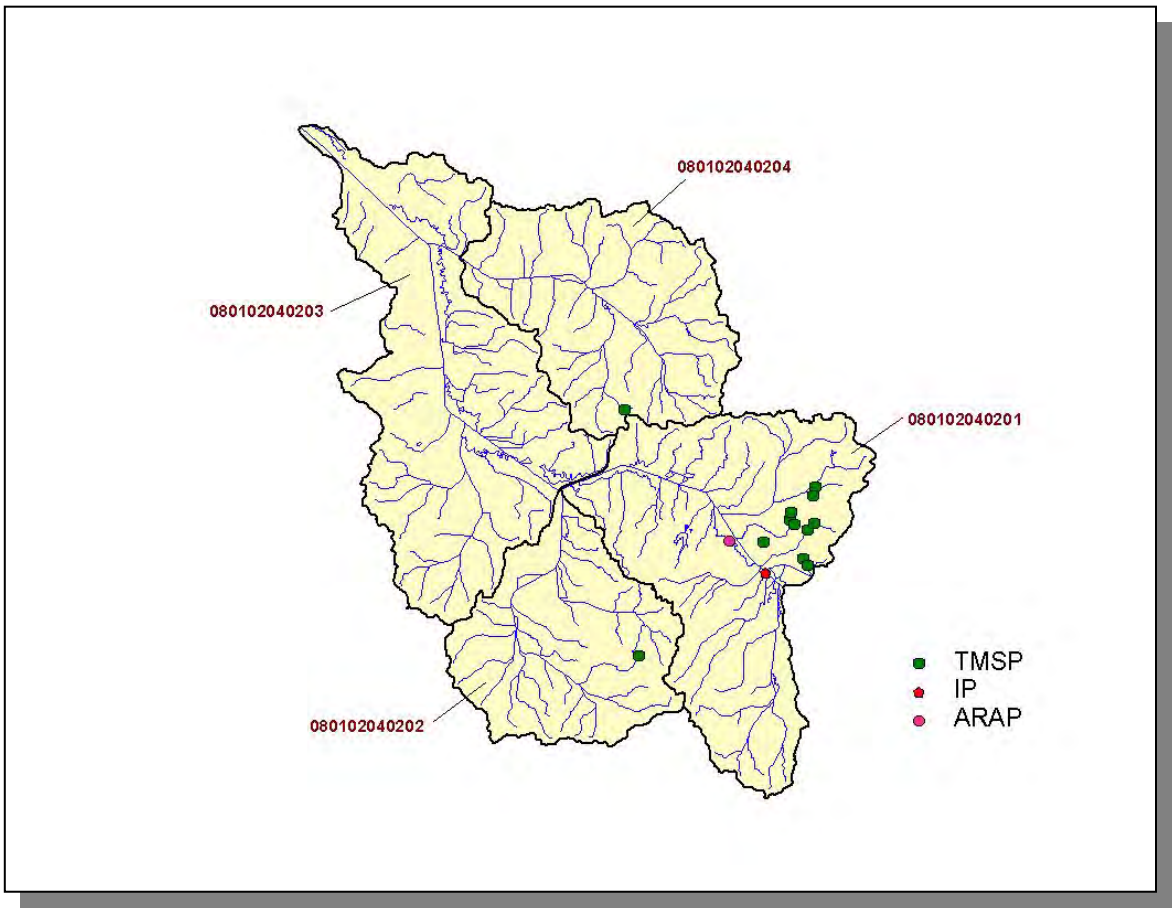



***Figure 4-20. Location of Active Point Source Facilities in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information is provided in the following figures.*

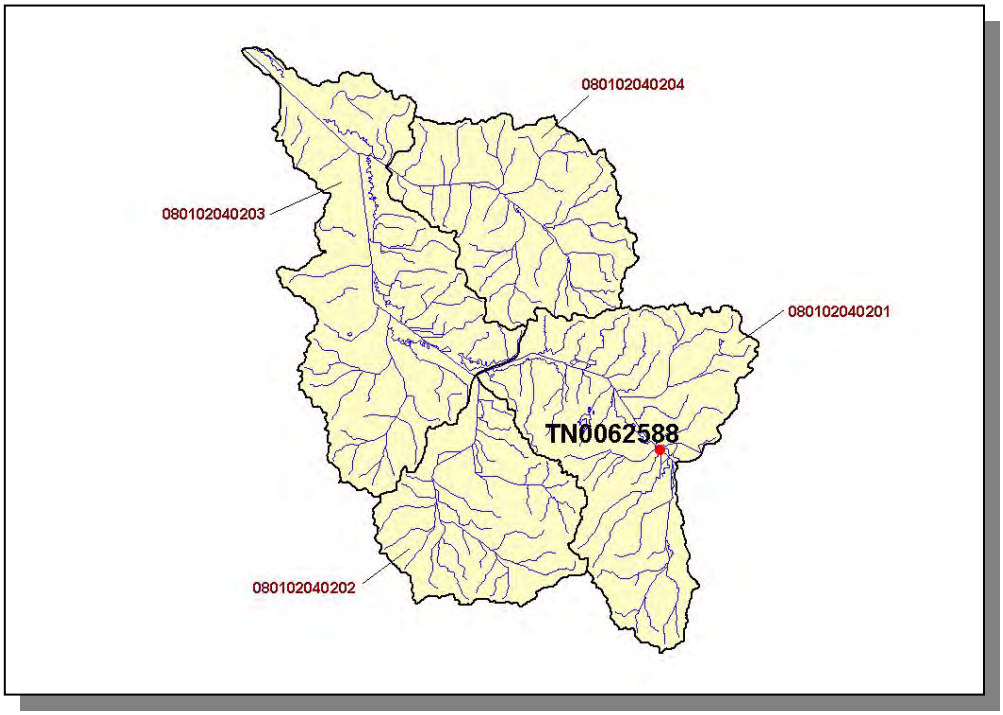



***Figure 4-21. Location of Active Point Source Facilities (Individual Permits) in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

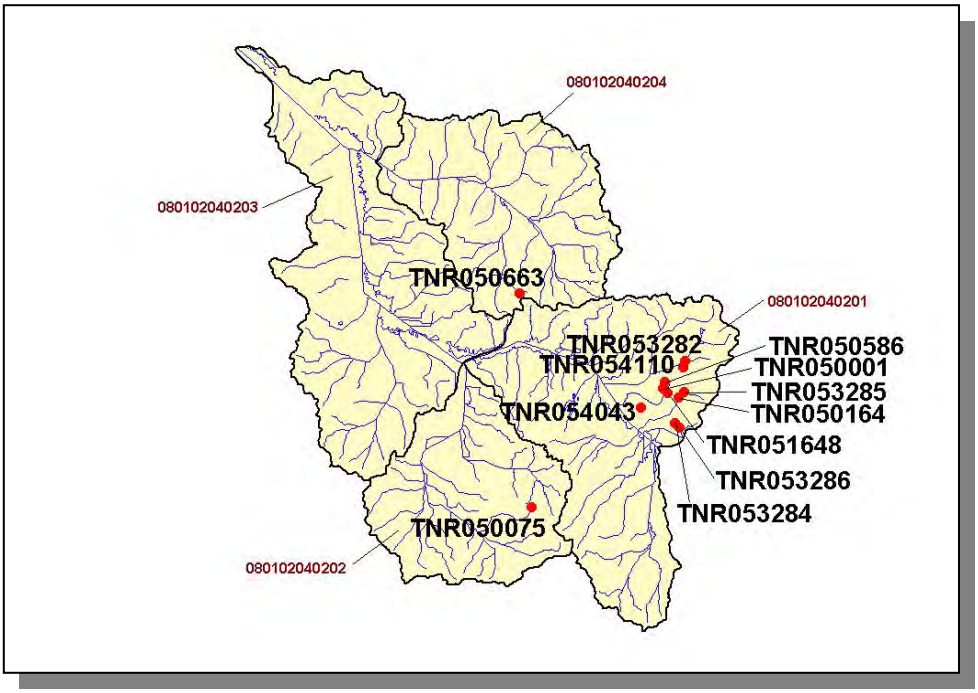



***Figure 4-22. Location of TMSP Facilities in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

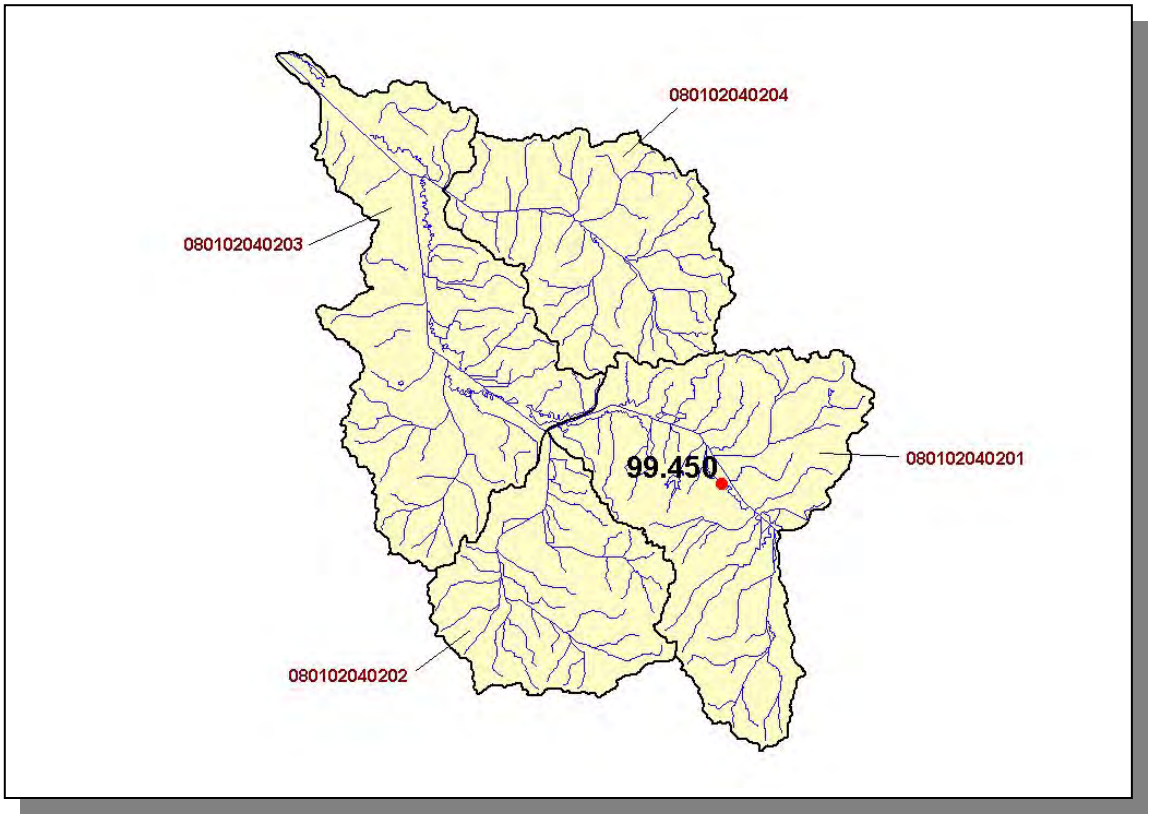



***Figure 4-23. Location of ARAP Sites (Individual Permits) in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

4.2.A.ii.a. Dischargers to Water Bodies Listed on the 1998 303(d) List

There is one NPDES facility discharging to water bodies listed on the 1998 303(d) list in Subwatershed 0801020402:

- TN0062588 (Humboldt STP) discharges to Middle Fork Forked Deer River @ RM 23.4


***Figure 4-24. Location of NPDES Dischargers to Water Bodies Listed on the 1998 303(d) List in Subwatershed 0801020402.*** *Subwatershed 080102040201, 080102040202, 080102040203, and 080102040204 boundaries are shown for reference. The names of facilities are provided in NFFD-Appendix IV.*

| PERMIT # | 1Q10 | 3Q10 | 7Q10 | 3Q20 | QDESIGN |
|---|---|---|---|---|---|
| TN0062588 | 48.60 | 48.93 | 49.77 | 47.05 | 2.60000 |

***Table 4-13. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020402.*** *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 # | $CBOD_5$ | pH | WET | $NH_3$ | CN | FECAL | TRC | SETTLEABLE SOLIDS | TSS | DO |
|---|---|---|---|---|---|---|---|---|---|---|
| TN0062588 | X | X | X | X | X | X | X | X | X | X |

***Table 4-14. Parameters Monitored for Daily Maximum (mg/L) Limits for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020402.*** *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); WET, Whole Effluent Toxicity; TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

4.2.B.iii. Nonpoint Source Contributions.

| LIVESTOCK (COUNTS) | | | | | | |
|---|---|---|---|---|---|---|
| Beef Cow | Cattle | Milk Cow | Chickens | Chickens Sold | Hogs | Sheep |
| | | | | | | |
| 3,237 | 6,816 | 42 | 7 | 0 | 1,576 | 30 |

Table 4-15. Summary of Livestock Count Estimates in Subwatershed 0801020402. *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) |
| | | | | |
| Crockett | 15.1 | 15.1 | 0.3 | 1.6 |
| Dyer | 40.4 | 40.4 | 0.8 | 2.8 |
| Gibson | 36.4 | 36.4 | 2.0 | 8.6 |
| Total | 91.9 | 91.9 | 3.1 | 13.0 |

***Table 4-16. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0801020402.***

| CROPS | TONS/ACRE/YEAR |
|---|---|
| Grass (Hayland) | 0.35 |
| Forest Land (Grazed) | 0.00 |
| Forest Land (Not Grazed) | 0.00 |
| Corn (Row Crops) | 7.66 |
| Soybeans (Row Crops) | 11.45 |
| Cotton (Row Crops) | 15.10 |
| Sorghum (Row Crops) | 6.37 |
| Wheat (Close Grown Cropland) | 3.56 |
| Oats (Close Grown Cropland) | 3.34 |
| All Other Close Grown Cropland | 0.47 |
| Grass (Pastureland) | 0.50 |
| Grass, Forbs, Legumes (Mixed Pasture) | 0.62 |
| Other Land in Farms (Other Farmland) | 0.70 |
| Conservation Reserve Program Lands | 0.54 |
| Other Vegetable and Truck Crops | 7.81 |
| All Other Crops not Planted | 0.68 |
| Non Agricultural Land Use | 0.00 |
| Farmsteads and Ranch Headquarters | 0.31 |

***Table 4-17. Annual Estimated Total Soil Loss in Subwatershed 0801020402.***

4.2.C. 0801020403.

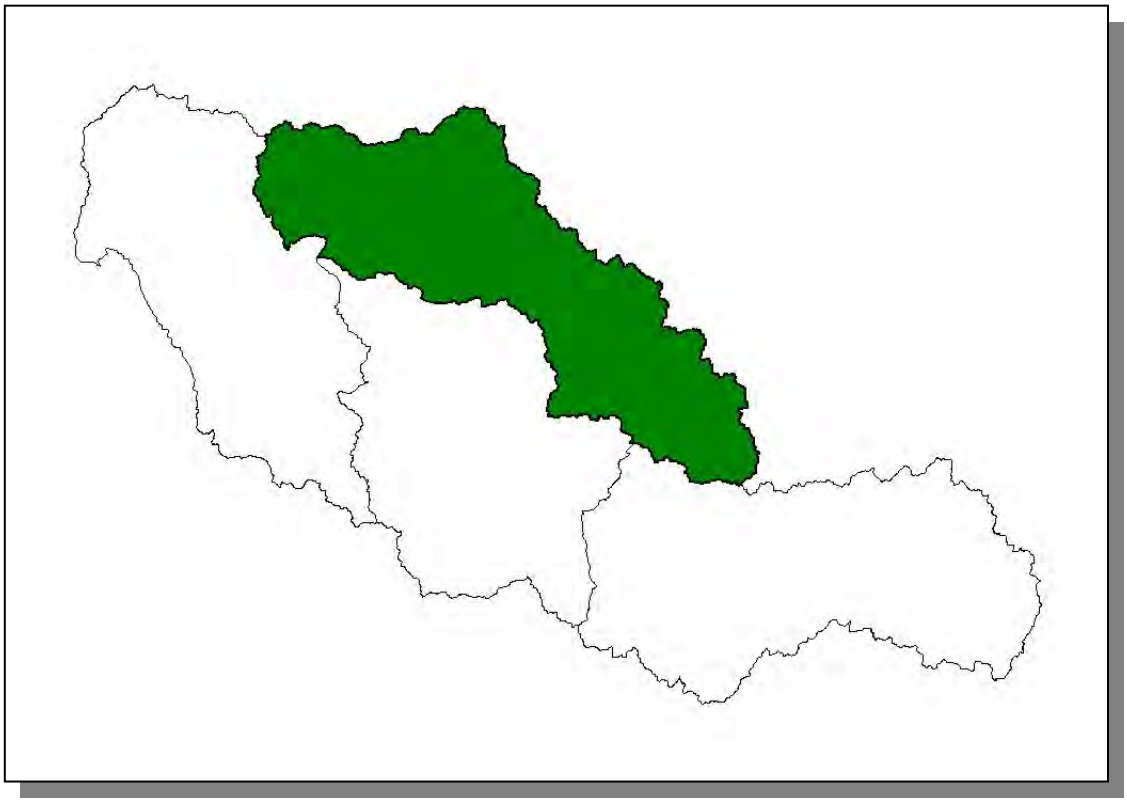


***Figure 4-25. Location of Subwatershed 0801020403.*** *All North Fork Forked Deer HUC-10 subwatershed boundaries are shown for reference.*

4.2.C.i. General Description.

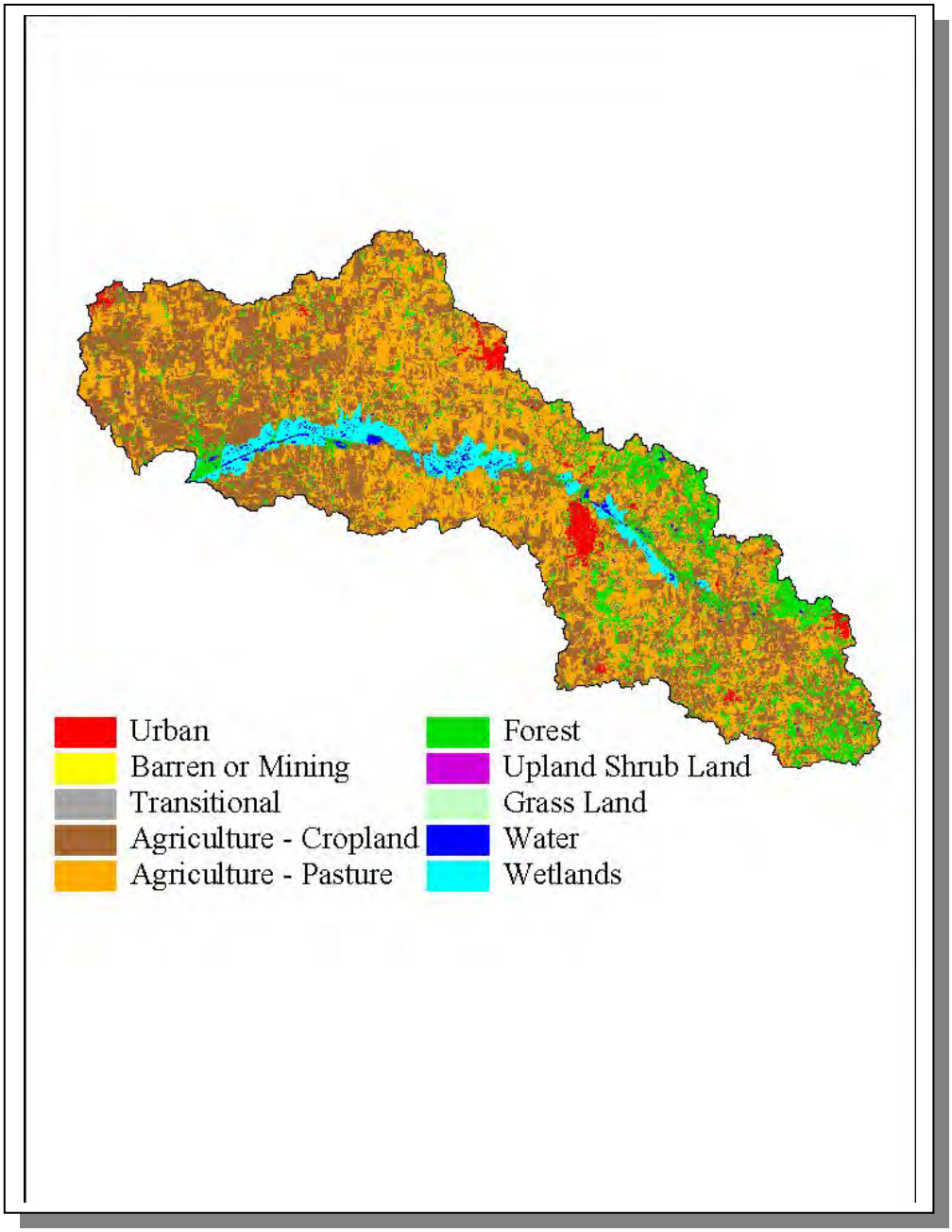



***Figure 4-26. Illustration of Land Use Distribution in Subwatershed 0801020403.***

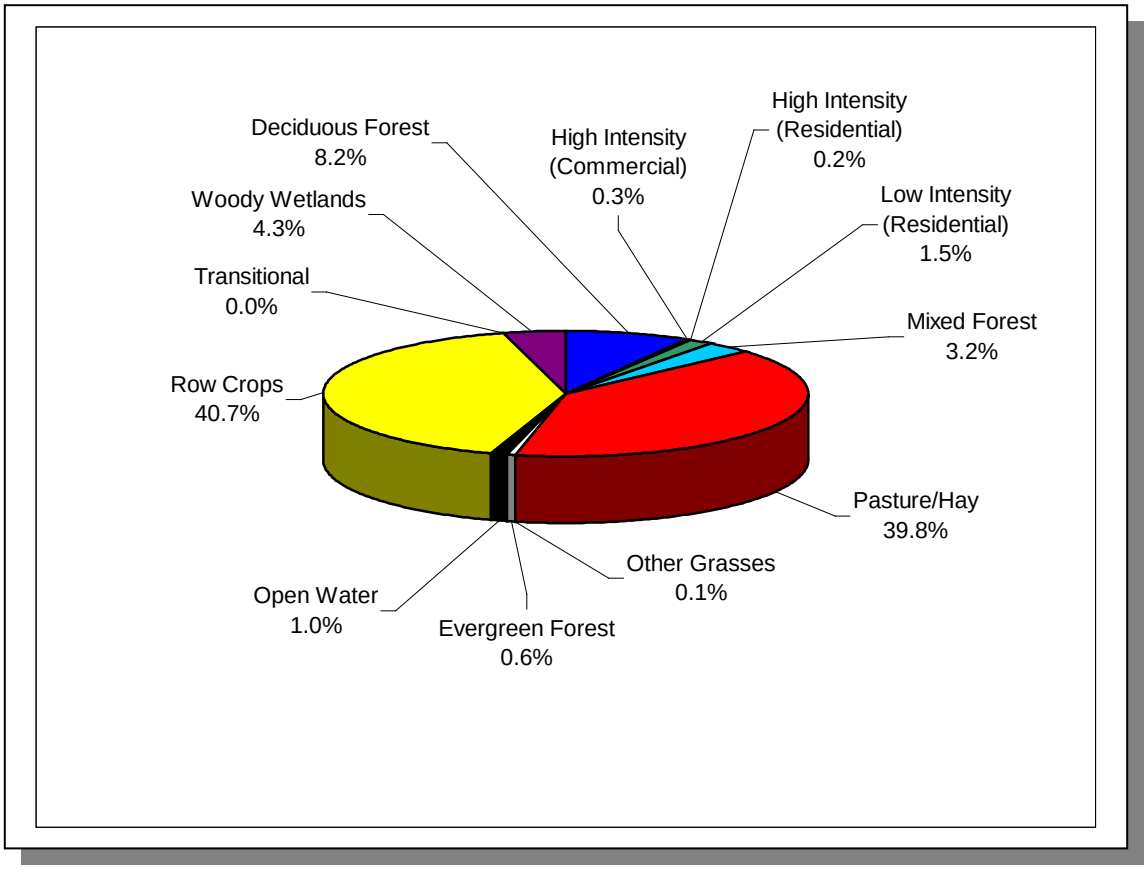



***Figure 4-27. Land Use Distribution in Subwatershed 0801020403.*** *More information is provided in NFFD-Appendix IV.*

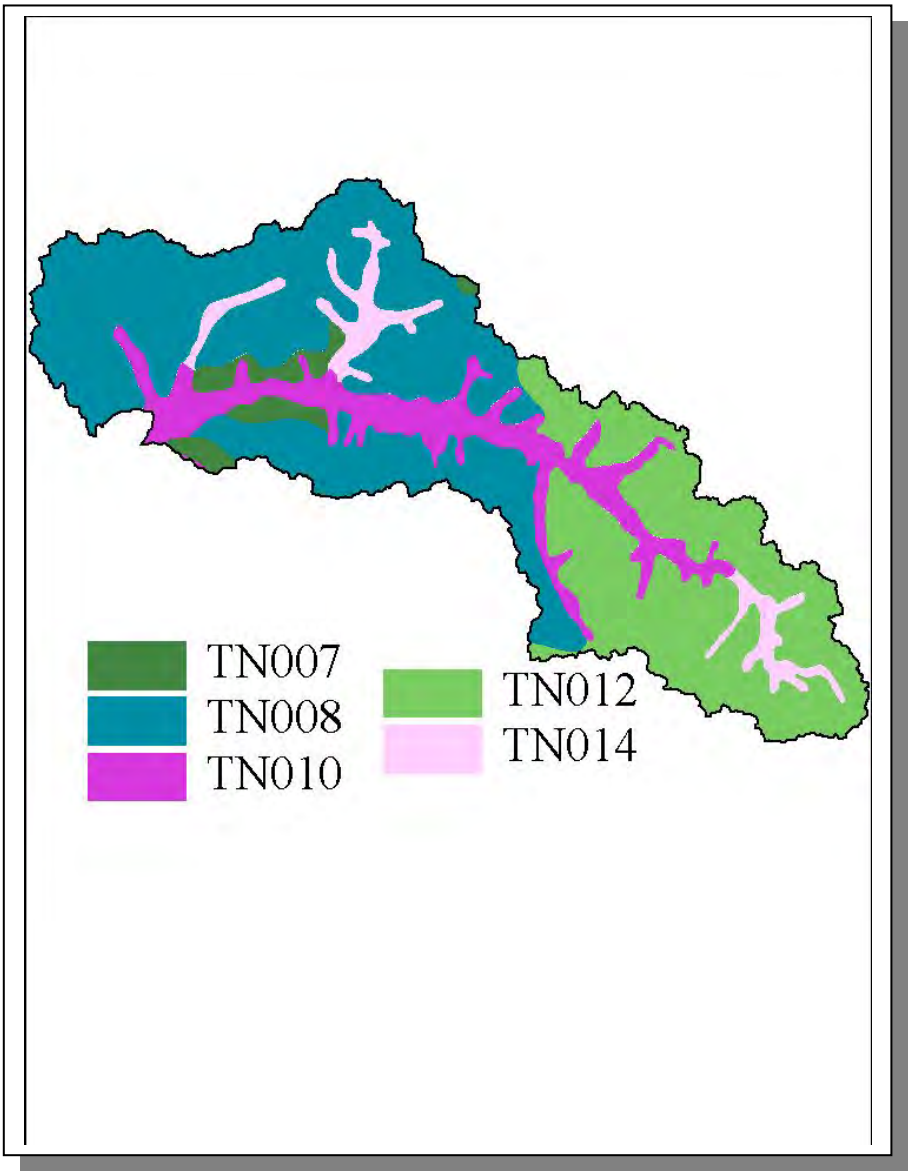



***Figure 4-28. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020403.***

| STATSGO MAP UNIT ID | PERCENT HYDRIC | HYDROLOGIC GROUP | PERMEABILITY (in/hour) | SOIL pH | ESTIMATED SOIL TEXTURE | SOIL ERODIBILITY |
|---|---|---|---|---|---|---|
| TN007 | 29.00 | C | 1.30 | 5.36 | Silty Loam | 0.48 |
| TN008 | 2.00 | C | 1.38 | 5.20 | Silty Loam | 0.48 |
| TN010 | 81.00 | C | 1.33 | 5.11 | Silty Loam | 0.44 |
| TN012 | 1.00 | C | 2.52 | 5.13 | Silty Loam | 0.39 |
| TN014 | 30.00 | C | 1.30 | 5.12 | Silty Loam | 0.47 |

***Table 4-18. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020403.*** *More information is provided in NFFD-Appendix IV.*

| | COUNTY POPULATION | | | ESTIMATED POPULATION IN WATERSHED | | PERCENT CHANGE |
|---|---|---|---|---|---|---|
| County | 1990 | 1997 Est. | Portion of Watershed (%) | 1990 | 1997 | |
| | | | | | | |
| Dyer | 34,854 | 36,465 | 7.39 | 2,576 | 2,695 | 4.6 |
| Gibson | 46,315 | 48,083 | 33.74 | 15,625 | 16,221 | 3.8 |
| **Total** | **81,169** | **84,548** | | **18,201** | **18,916** | **3.9** |

***Table 4-19. Population Estimates in Subwatershed 0801020403.***

| | | | NUMBER OF HOUSING UNITS | | | |
|---|---|---|---|---|---|---|
| Populated Place | County | Population | Total | Public Sewer | Septic Tank | Other |
| | | | | | | |
| Dyer | Gibson | 2,190 | 972 | 932 | 40 | 0 |
| Gibson | Gibson | 287 | 118 | 110 | 4 | 4 |
| Milan | Gibson | 7,512 | 3,300 | 3,183 | 110 | 7 |
| Newbern | Dyer | 2,514 | 1,052 | 994 | 58 | 0 |
| Trenton | Gibson | 4,836 | 2,150 | 2,073 | 77 | 0 |
| Yorkville | Gibson | 355 | 142 | 7 | 133 | 2 |
| **Total** | | **17,694** | **7,734** | **7,299** | **422** | **13** |

***Table 4-20. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0801020403.***

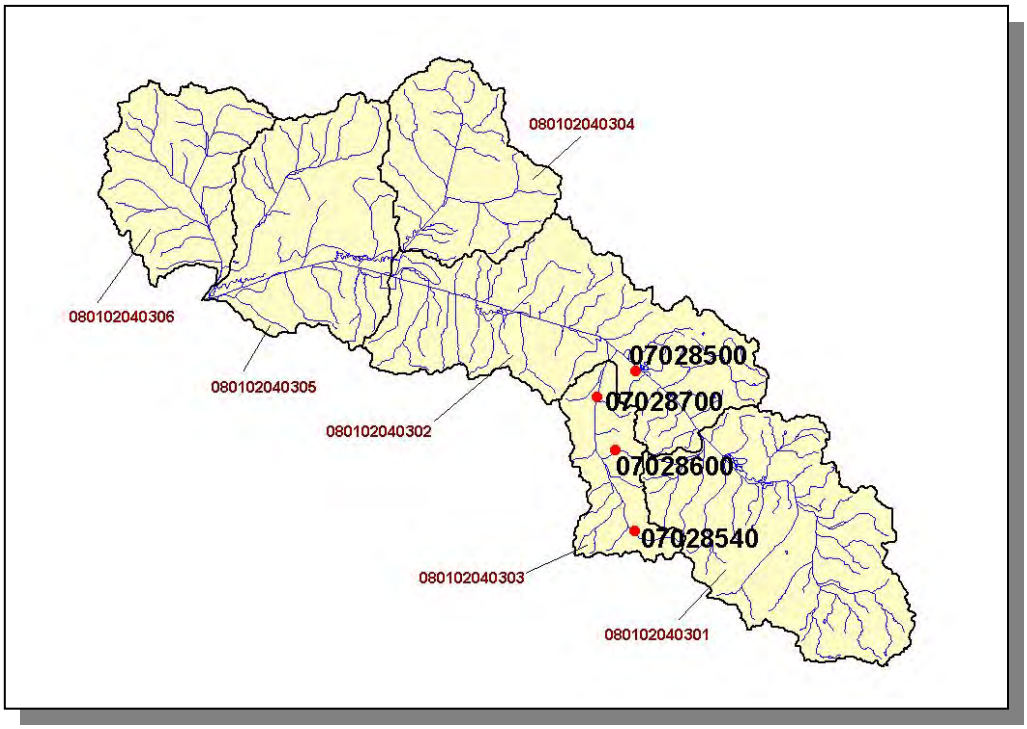



***Figure 4-29. Location of Historical Streamflow Data Collection Sites in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

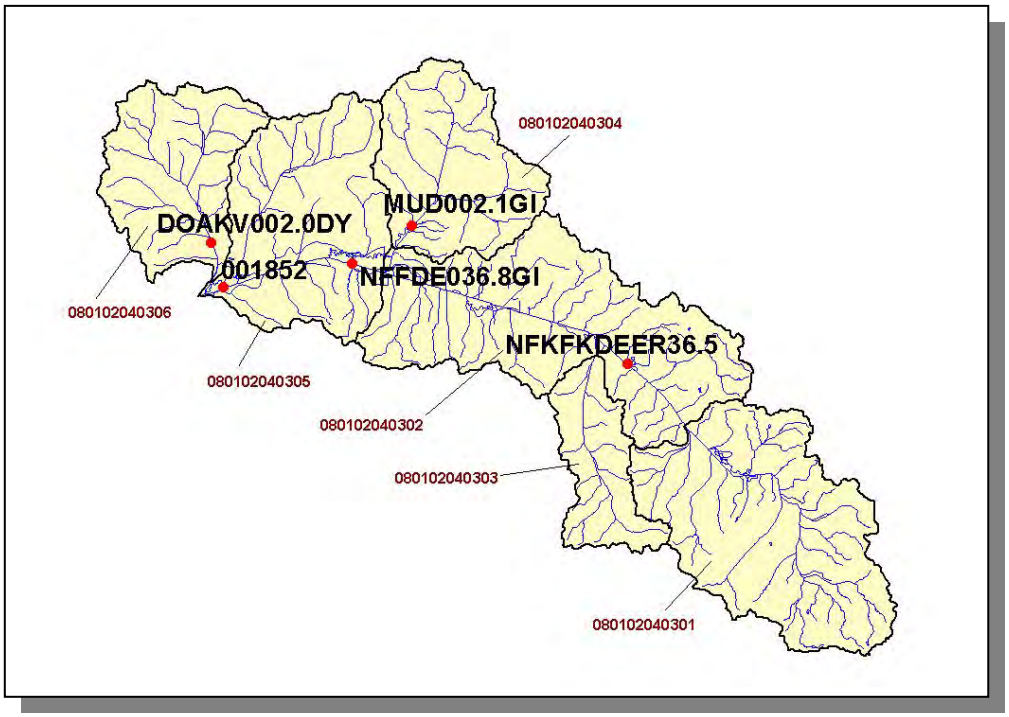



***Figure 4-30. Location of STORET Monitoring Sites in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

4.2.C.ii. Point Source Contributions.

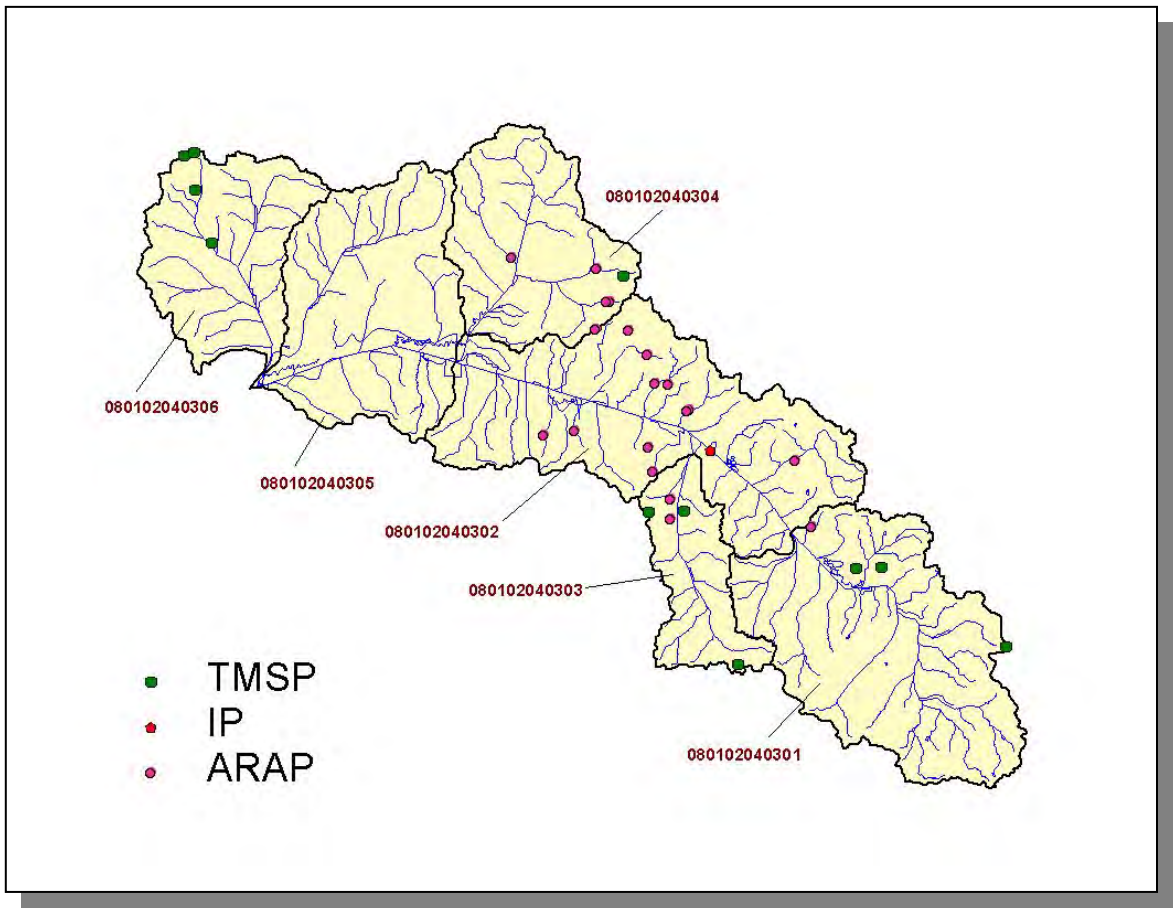



***Figure 4-31. Location of Active Point Source Facilities in Subwatershed 0802020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. Tennessee Multi-Sector Permits (TMSP), green squares; Individual Permits, red pentagons; ARAP, magenta circles; Concentrated Animal Feeding Operations (CAFO), brown hexagons; Ready-Mix Concrete Permits (RMCP), turquoise stars; Mining Permits, gray triangles; Water Treatment Permits, Purple crosses. More information is provided in the following figures.*

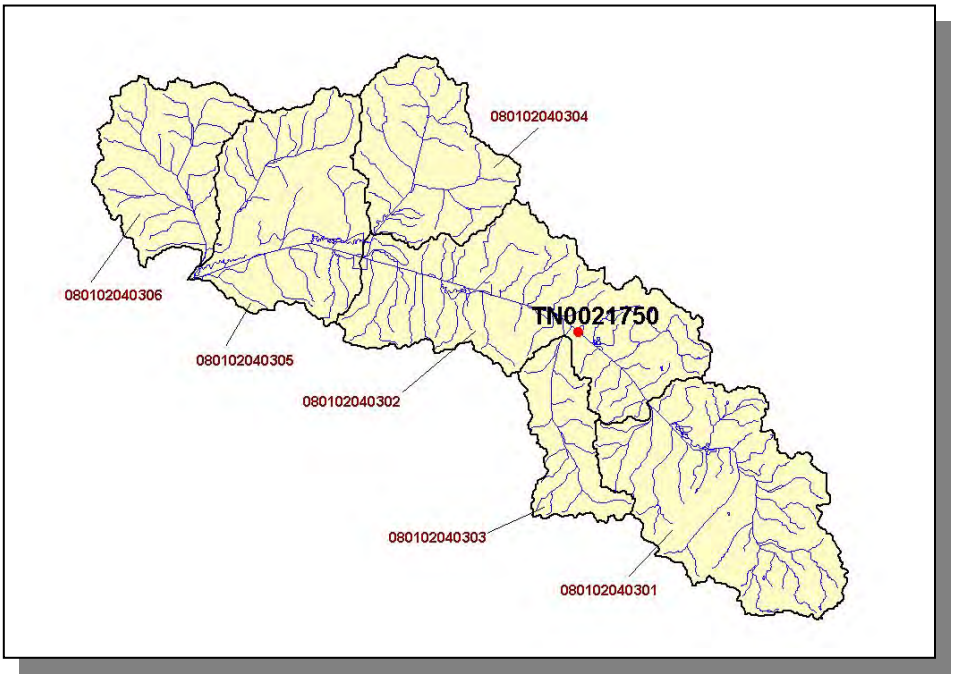



***Figure 4-32. Location of Active Point Source Facilities (Individual Permits) in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

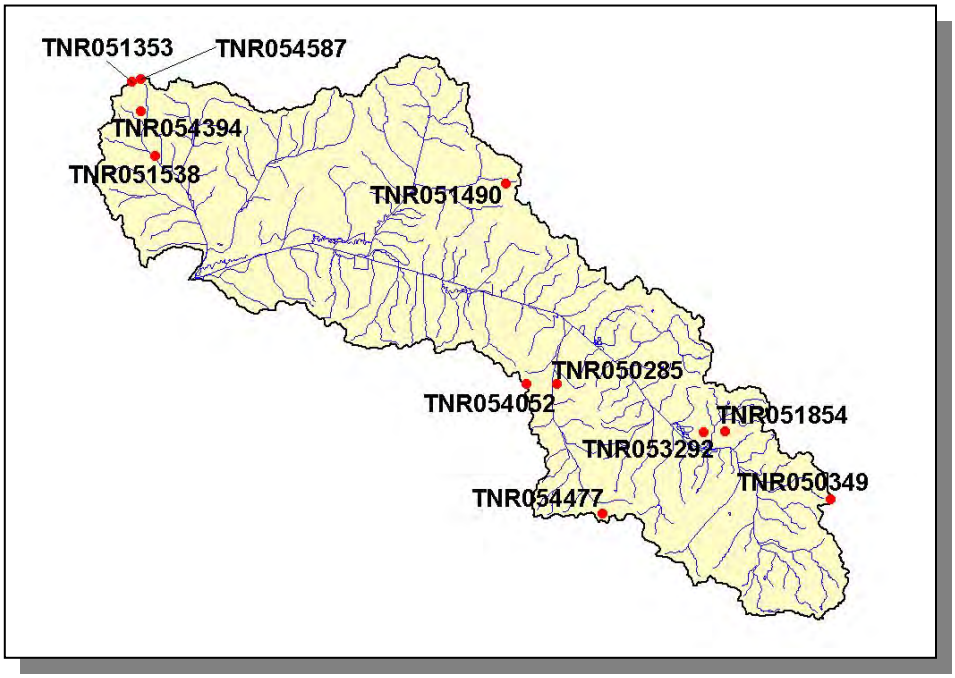



***Figure 4-33. Location of TMSP Facilities in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

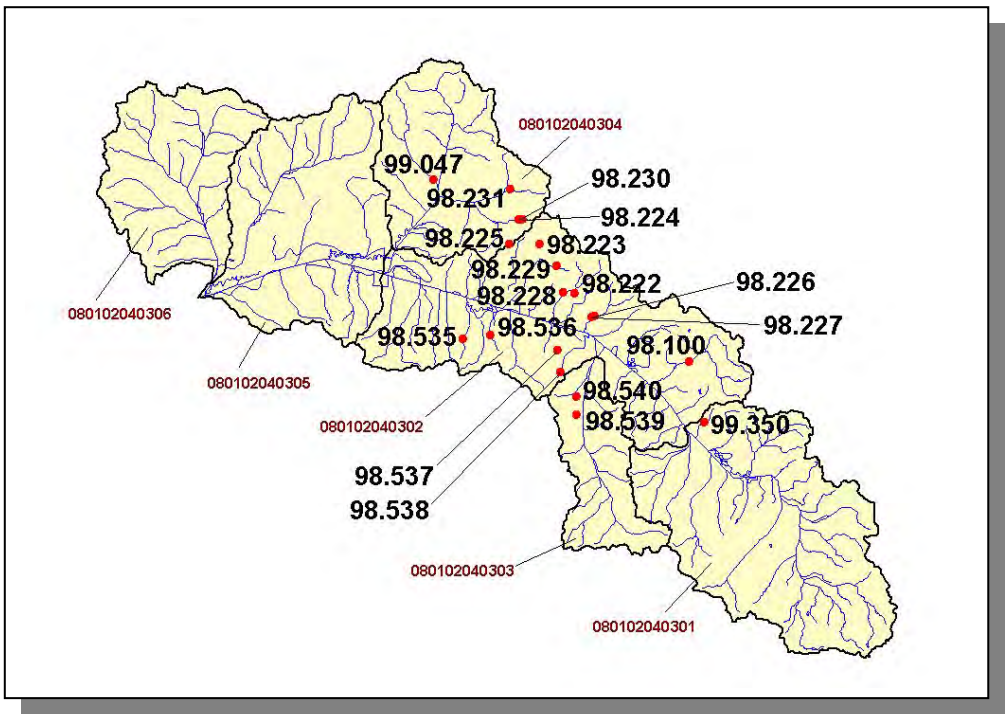



***Figure 4-34. Location of ARAP Sites (Individual Permits) in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. More information, including the names of facilities, is provided in NFFD-Appendix IV.*

4.2.A.ii.a. Dischargers to Water Bodies Listed on the 1998 303(d) List

There is one NPDES facility discharging to water bodies listed on the 1998 303(d) list in Subwatershed 0801020403:

- TN0021750 (Trenton Lagoon) discharges to North Fork Forked Deer River @ RM 35.9

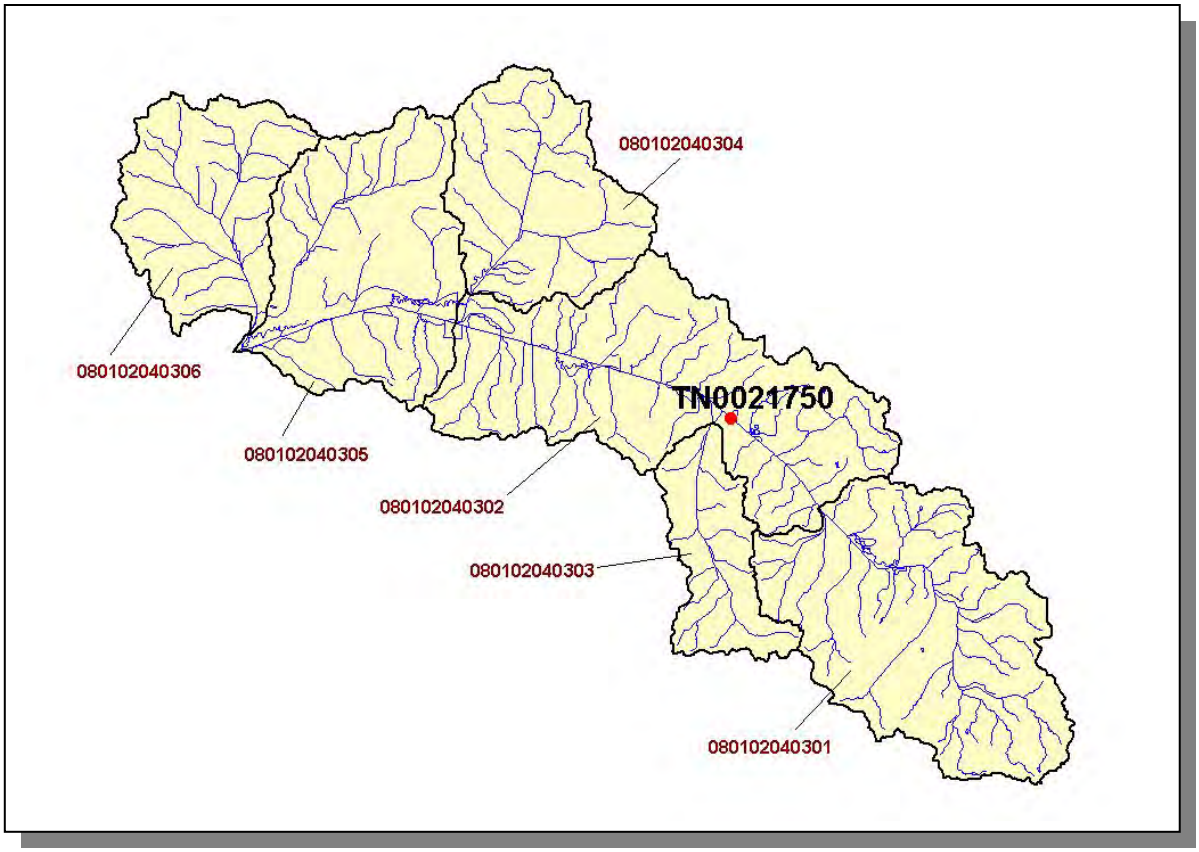



***Figure 4-35. Location of NPDES Dischargers to Water Bodies Listed on the 1998 303(d) List in Subwatershed 0801020403.*** *Subwatershed 080102040301, 080102040302, 080102040303, 080102040304, 080102040305, and 080102040306 boundaries are shown for reference. The names of facilities are provided in NFFD-Appendix IV.*

| PERMIT # | 1Q10 | 3Q10 | 7Q10 | 3Q20 | QDESIGN |
|---|---|---|---|---|---|
| TN0021750 | 4.60 | 4.69 | 4.82 | 4.04 | 0.75000 |

***Table 4-21. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020403.*** *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 # | $CBOD_5$ | pH | WET | $NH_3$ | FECAL | TRC | SETTLEABLE SOLIDS | TSS | DO |
|---|---|---|---|---|---|---|---|---|---|
| TN0021750 | X | X | X | X | X | X | X | X | X |

***Table 4-22. Parameters Monitored for Daily Maximum (mg/L) Limits for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020403.*** *$CBOD_5$, Carbonaceous Biochemical Oxygen Demand (5-Day); WET, Whole Effluent Toxicity; TRC, Total Residual Chlorine; TSS, Total Suspended Solids; DO, Dissolved Oxygen.*

4.2.C.iii. Nonpoint Source Contributions.

| LIVESTOCK (COUNTS) | | | | | | |
|---|---|---|---|---|---|---|
| Beef Cow | Cattle | Milk Cow | Chickens | Chickens Sold | Hogs | Sheep |
| | | | | | | |
| 3,577 | 9,568 | 81 | 9 | 0 | 2,939 | 27 |

***Table 4-23. Summary of Livestock Count Estimates in Subwatershed 0801020403.*** *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) |
| | | | | |
| Dyer | 40.4 | 40.4 | 0.8 | 2.8 |
| Gibson | 36.4 | 36.4 | 2.0 | 8.6 |
| **Totals** | **76.8** | **76.8** | **2.8** | **11.4** |

***Table 4-24. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0801020403.***

| CROPS | TONS/ACRE/YEAR |
|---|---|
| Grass (Hayland) | 0.31 |
| Grass (Pastureland) | 0.50 |
| Grass, Forbs, Legumes (Mixed Pasture) | 0.80 |
| Forest Land (Grazed) | 0.00 |
| Forest Land (Not Grazed) | 0.00 |
| Corn (Row Crops) | 11.01 |
| Soybeans (Row Crops) | 8.10 |
| Sorghum (Row Crops) | 6.30 |
| Cotton (Row Crops) | 15.28 |
| Wheat (Close Grown Cropland) | 3.88 |
| Oats (Close Grown Cropland) | 3.34 |
| Conservation Reserve Program Land | 0.46 |
| Other Land in Farms | 1.34 |
| Farmsteads and Ranch Headquarters | 0.50 |
| Other Cropland not Planted | 0.70 |
| Nonagricultural Land Use | 0.00 |

***Table 4-25. Annual Estimated Total Soil Loss in Subwatershed 0801020403.***

4.2.D. 0801020404.

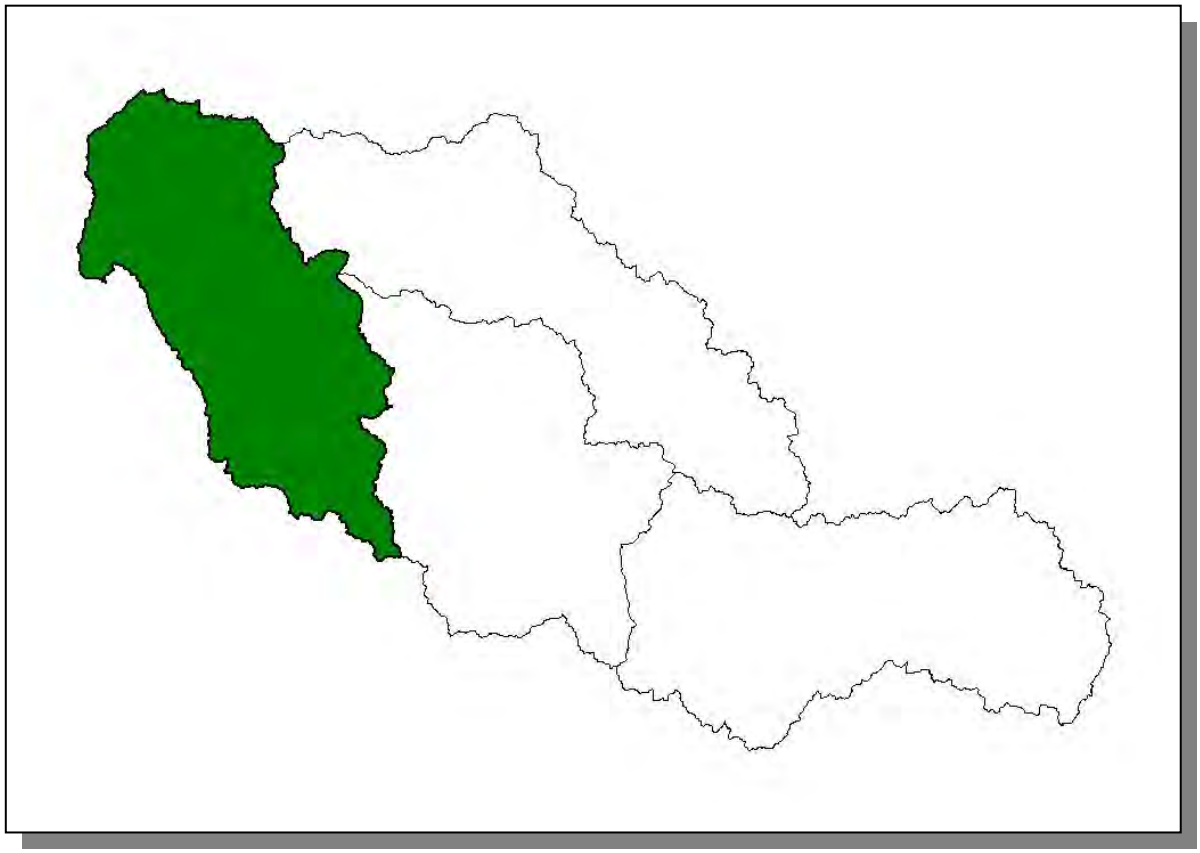


***Figure 4-36. Location of Subwatershed 0801020404.*** *All North Fork Forked Deer subwatershed boundaries are shown for reference.*

4.2.D.i. General Description.

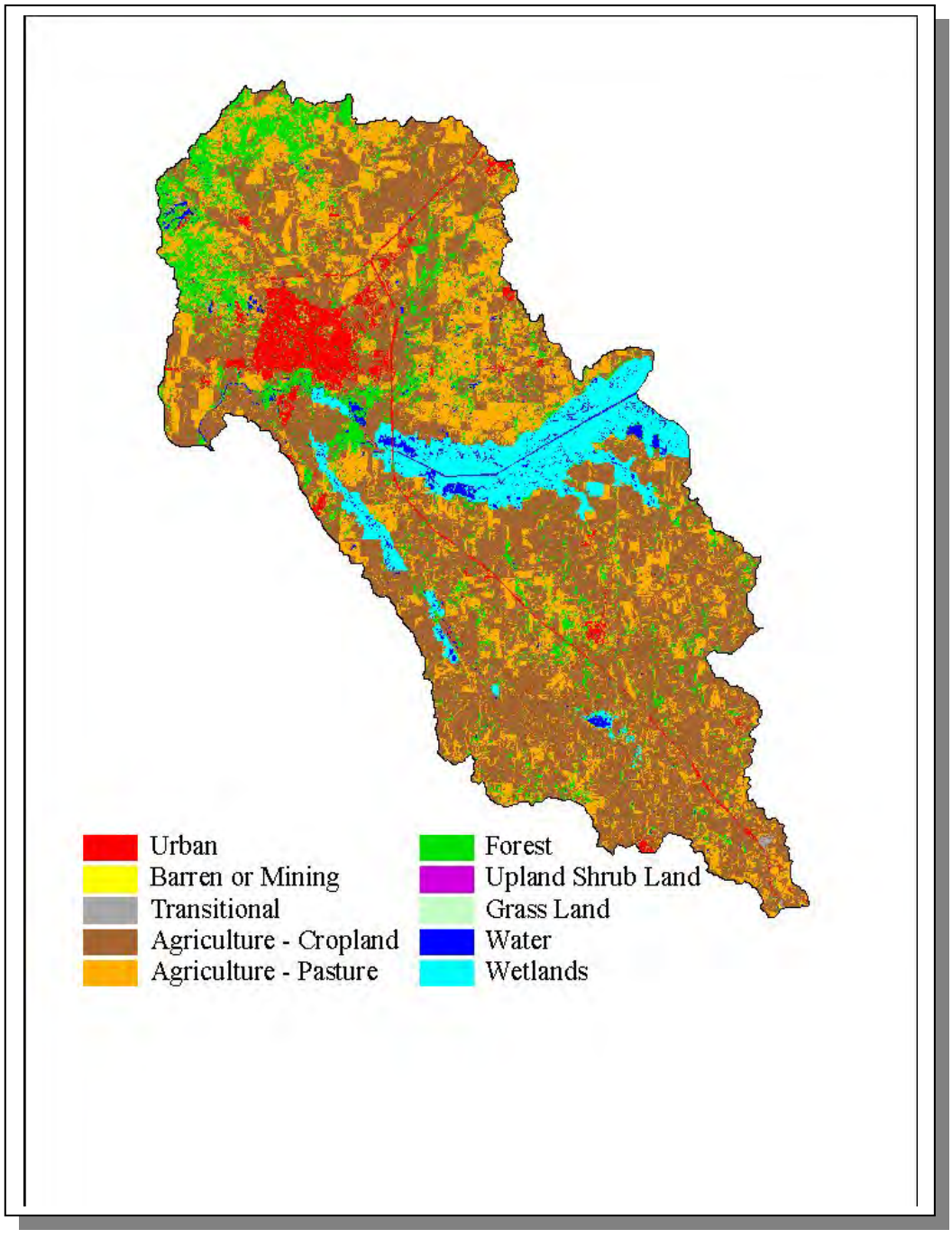



***Figure 4-37. Illustration of Land Use Distribution in Subwatershed 0801020404.***

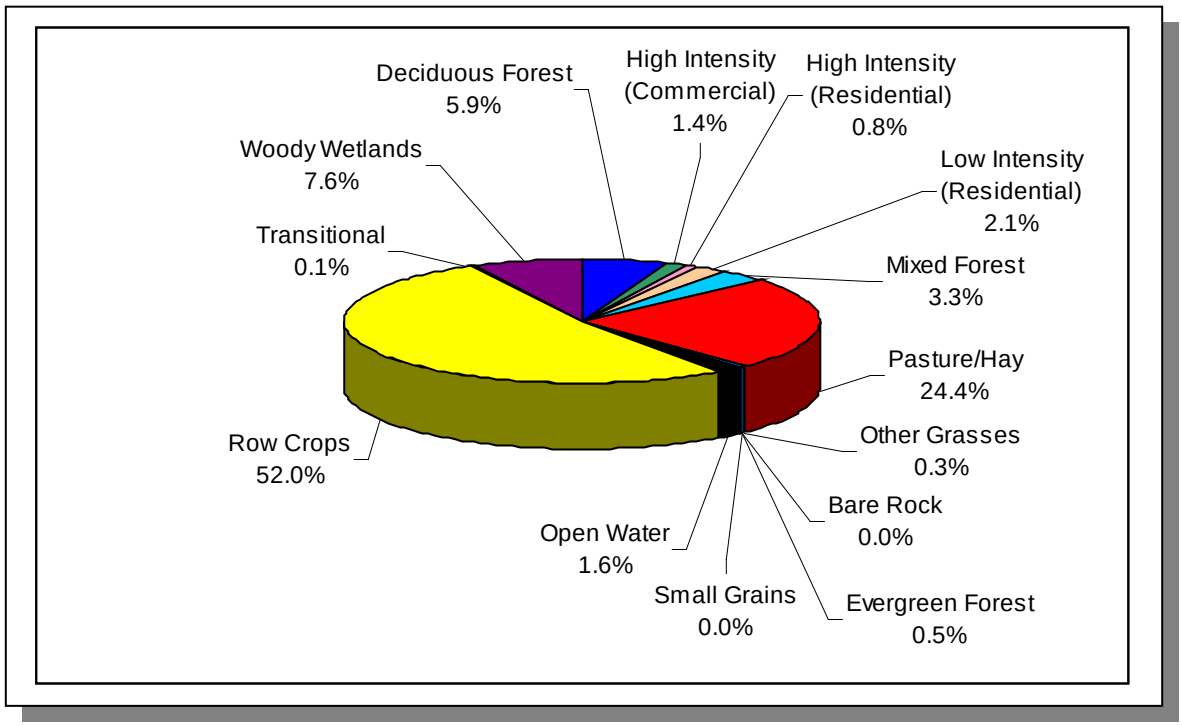



***Figure 4-38. Land Use Distribution in Subwatershed 0801020404.*** *More information is provided in NFFD-Appendix IV.*

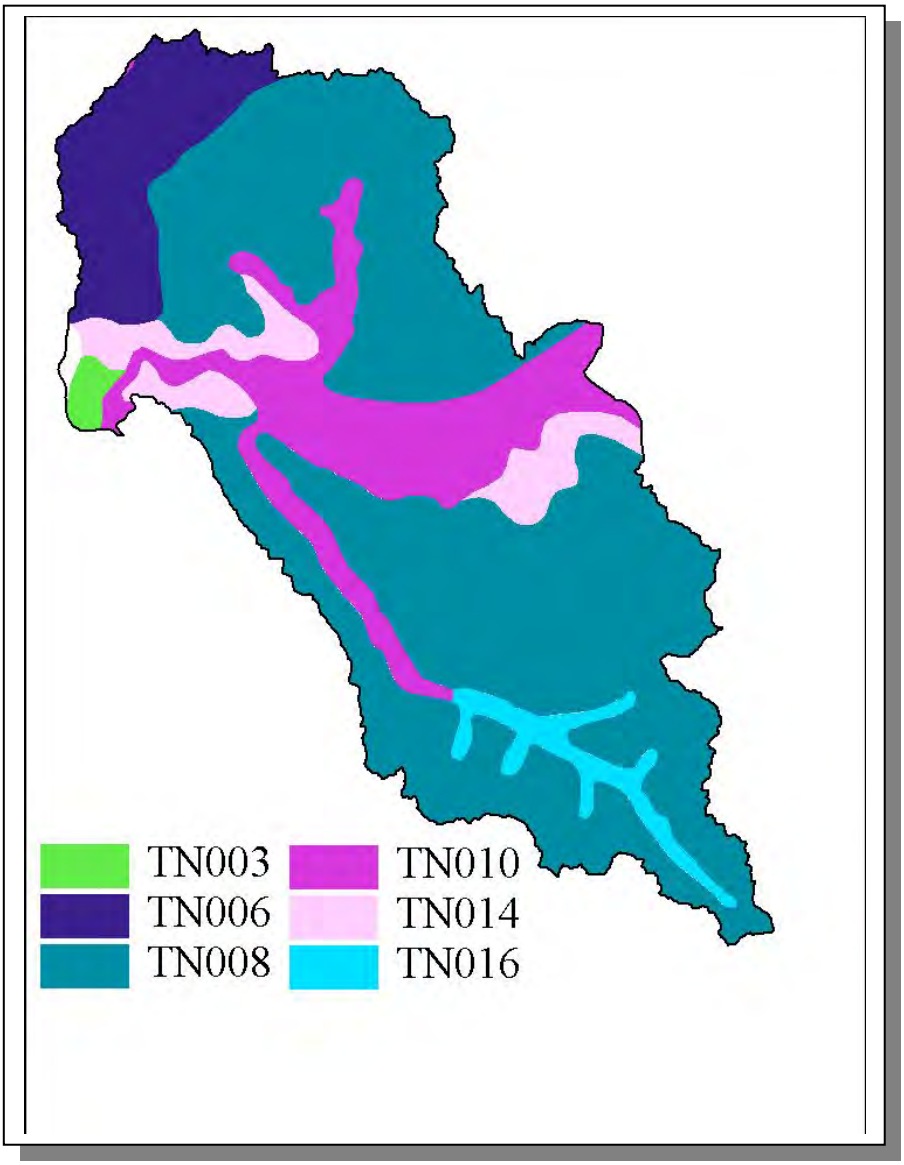



***Figure 4-39. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020404.***

| STATSGO MAP UNIT ID | PERCENT HYDRIC | HYDROLOGIC GROUP | PERMEABILITY (in/hour) | SOIL pH | ESTIMATED SOIL TEXTURE | SOIL ERODIBILITY |
|---|---|---|---|---|---|---|
| TN003 | 62.00 | C | 0.50 | 6.65 | Silty Clay | 0.33 |
| TN005 | 10.00 | C | 1.79 | 6.68 | Silty Loam | 0.41 |
| TN006 | 0.00 | C | 1.30 | 5.42 | Silty Loam | 0.48 |
| TN008 | 2.00 | C | 1.38 | 5.20 | Silty Loam | 0.48 |
| TN010 | 81.00 | C | 1.33 | 5.11 | Silty Loam | 0.44 |
| TN014 | 30.00 | C | 1.30 | 5.12 | Silty Loam | 0.47 |
| TN016 | 0.00 | C | 1.30 | 6.47 | Silty Loam | 0.44 |

***Table 4-26. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 0801020404.*** *More information is provided in NFFD-Appendix IV.*

| | COUNTY POPULATION | | | ESTIMATED POPULATION IN WATERSHED | | PERCENT CHANGE |
|---|---|---|---|---|---|---|
| County | 1990 | 1997 Est. | Portion of Watershed (%) | 1990 | 1997 | |
| | | | | | | |
| Crockett | 13,378 | 13,841 | 24.84 | 3,324 | 3,439 | 3.5 |
| Dyer | 34,854 | 36,465 | 30.28 | 10,555 | 11,043 | 4.6 |
| **Total** | **48,232** | **50, 306** | | **13,879** | **14,482** | **4.3** |

***Table 4-27. Population Estimates in Subwatershed 0801020404.***

| | | | NUMBER OF HOUSING UNITS | | | |
|---|---|---|---|---|---|---|
| Populated Place | County | Population | Total | Public Sewer | Septic Tank | Other |
| | | | | | | |
| Alamo | Crockett | 2,400 | 1,044 | 1,001 | 43 | 0 |
| Dyersberg | Dyer | 16,317 | 7,041 | 6,993 | 48 | 0 |
| Friendship | Crockett | 468 | 203 | 196 | 7 | 0 |
| Maury City | Crockett | 781 | 318 | 22 | 288 | 8 |
| Newbern | Dyer | 2,514 | 1,052 | 994 | 58 | 0 |
| **Total** | | **22,480** | **9,658** | **9,206** | **444** | **8** |

***Table 4-28. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 0801020404.***

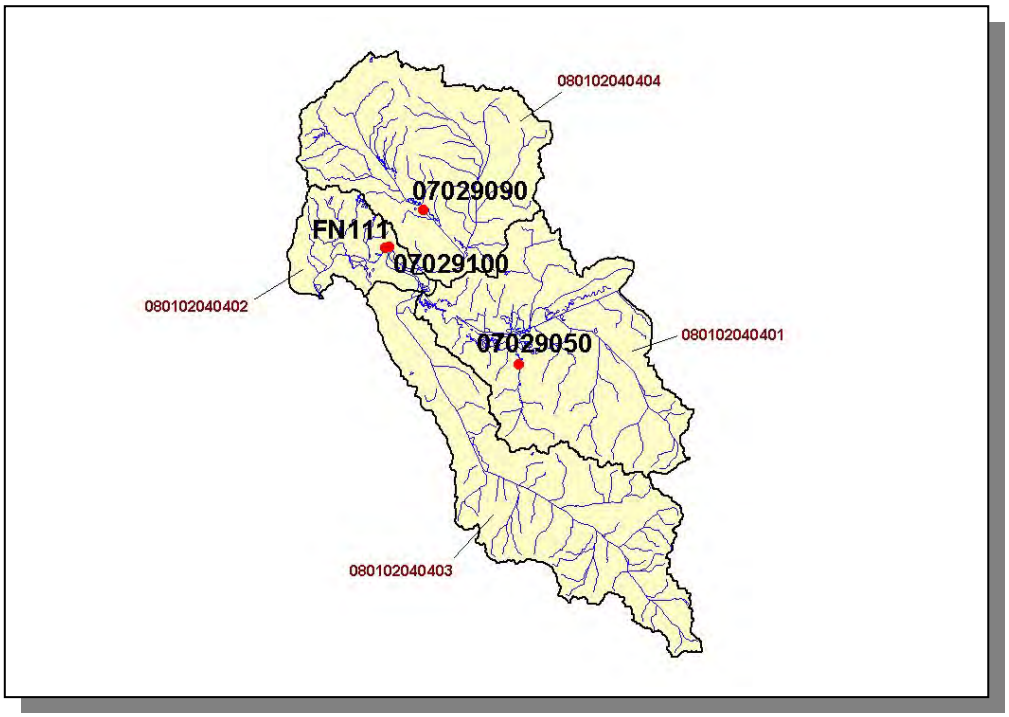



***Figure 4-40. Location of Historical Streamflow Data Collection Sites in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

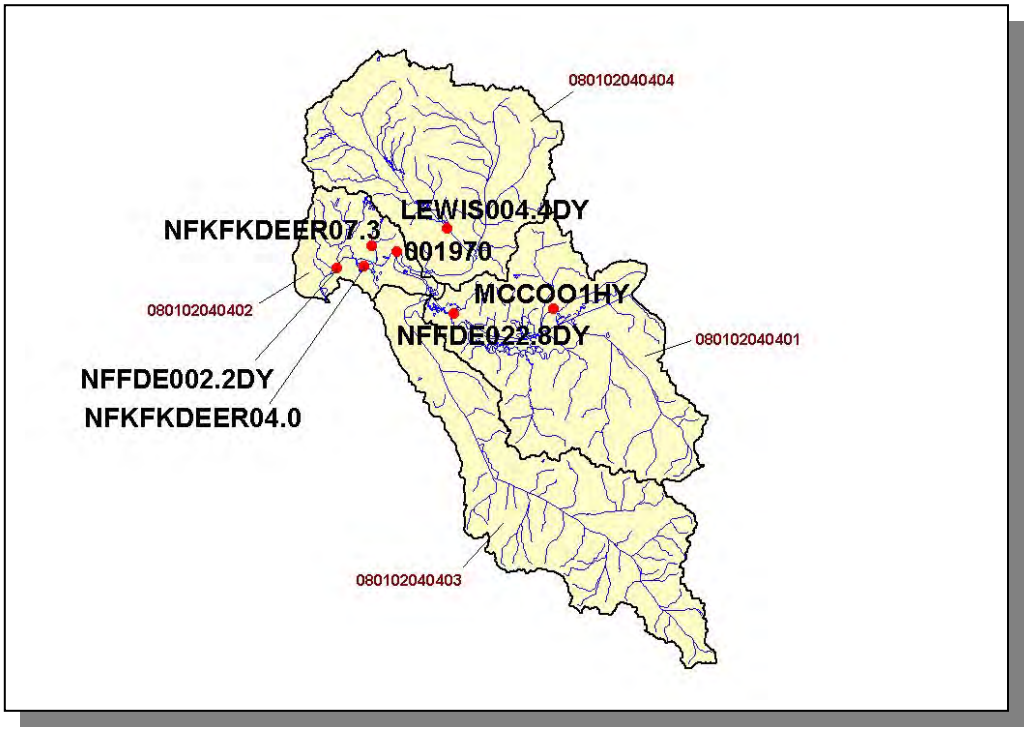


***Figure 4-41. Location of STORET Monitoring Sites in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

4.2.D.ii. Point Source Contributions.

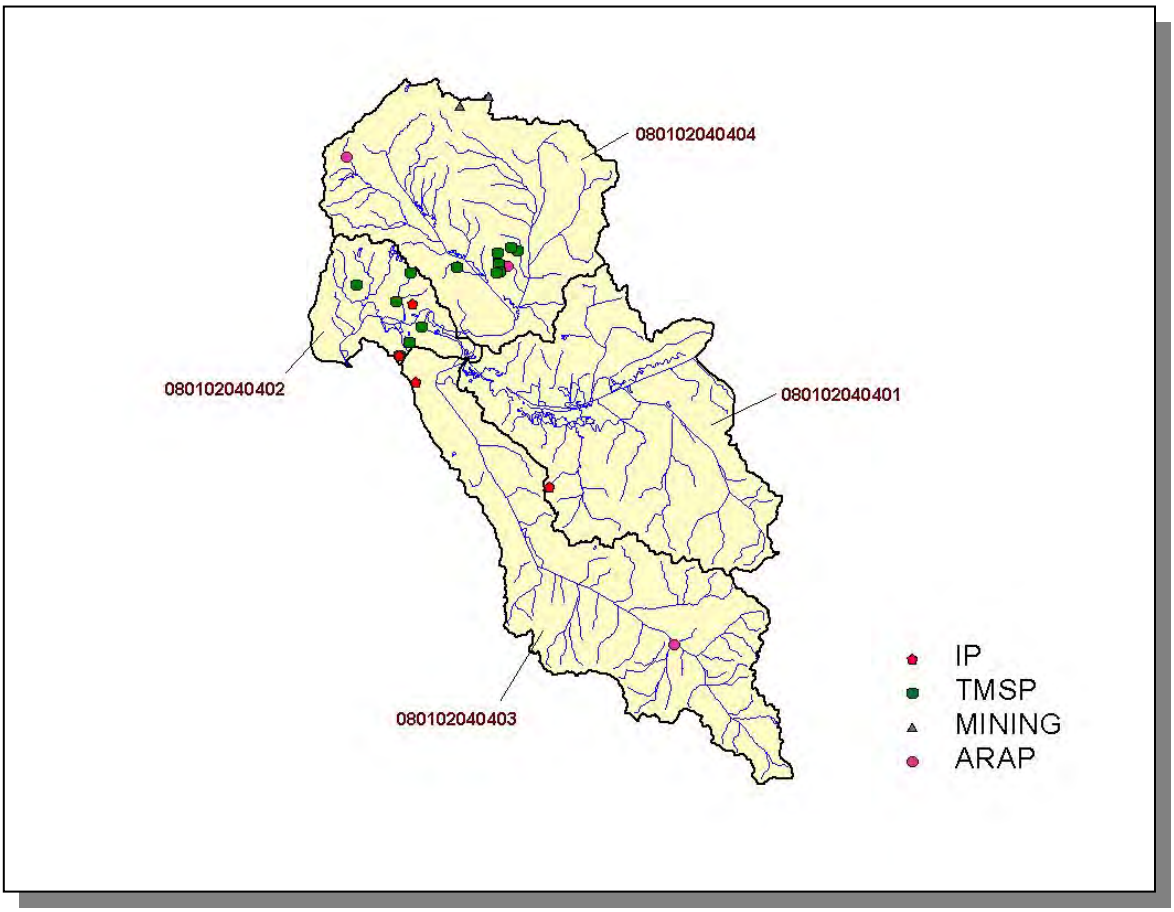



***Figure 4-42. Location of Active Point Source Facilities in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in the following figures.*

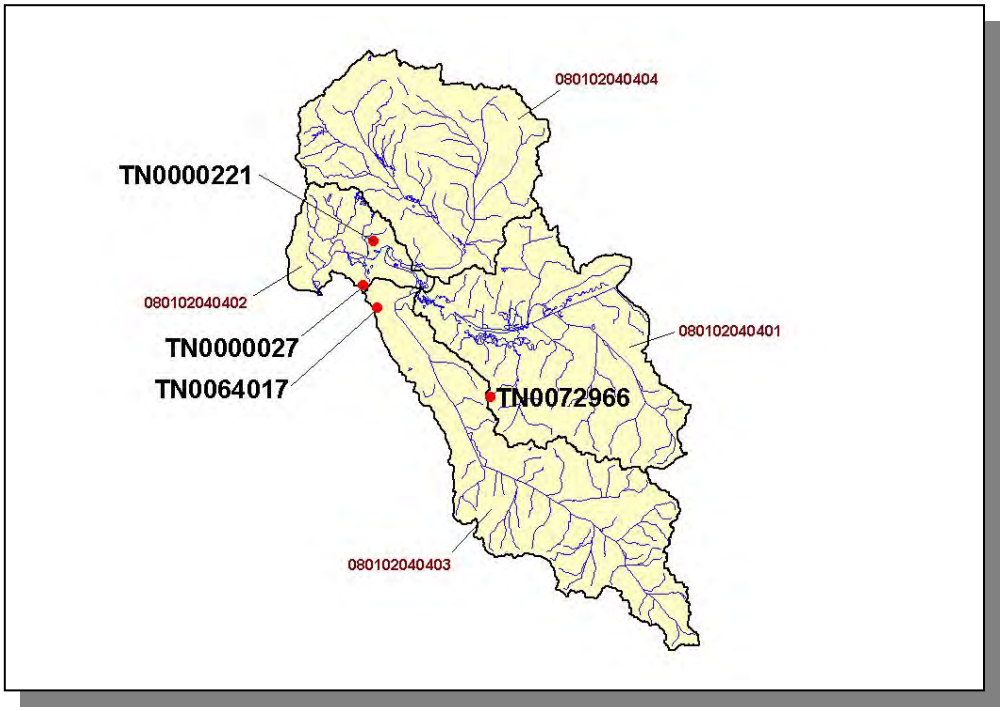



***Figure 4-43. Location of Active Point Source Facilities (Individual Permits) in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

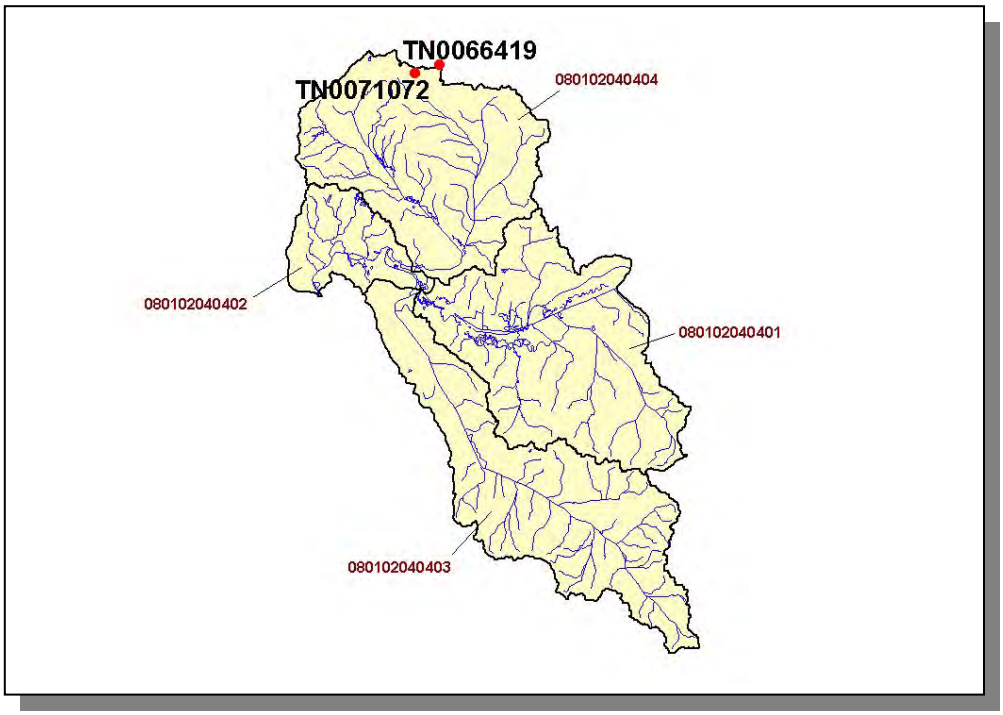


***Figure 4-44. Location of Active Mining Sites in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

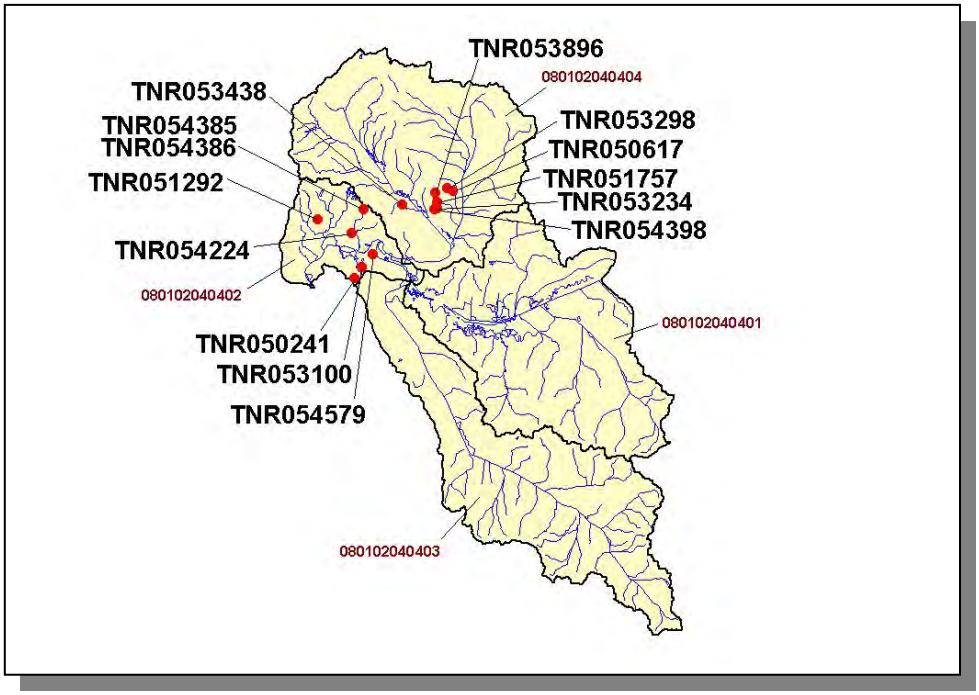



***Figure 4-45. Location of TMSP Facilities in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

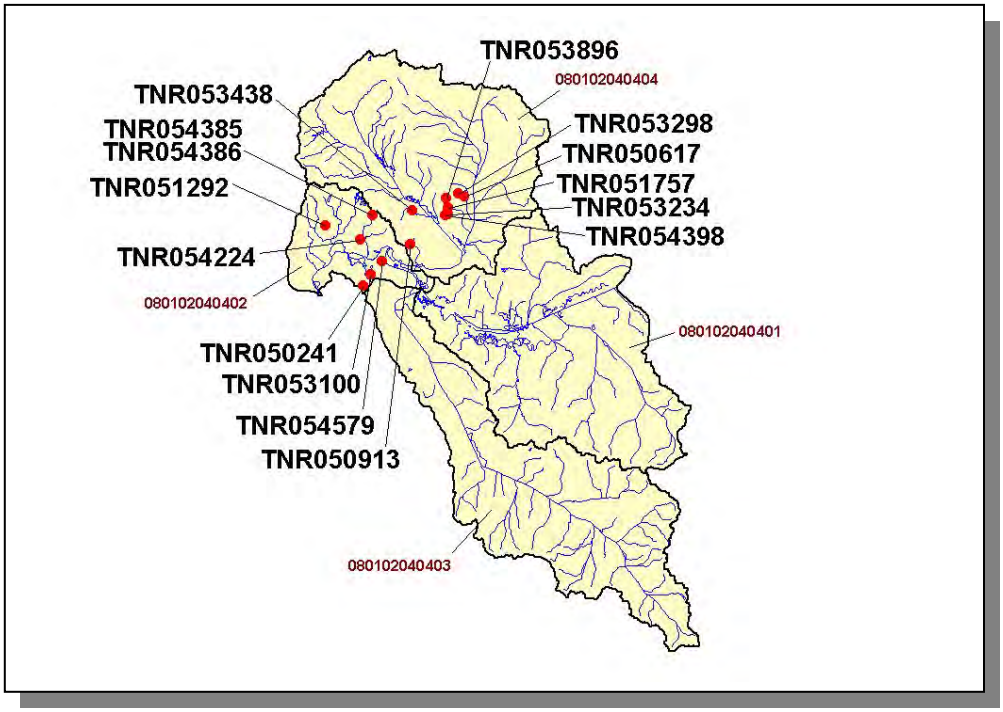


***Figure 4-46. Location of ARAP Sites (Individual Permits) in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402, 080102040403, and 080102040404 boundaries are shown for reference. More information is provided in NFFD-Appendix IV.*

4.2.A.ii.a. Dischargers to Water Bodies Listed on the 1998 303(d) List

There are four NPDES facilities discharging to water bodies listed on the 1998 303(d) list in Subwatershed 0801020404:

- TN0000027 (Heckethorn Maufacturing) discharges to North Fork Forked Deer River @ RM 1.3
- TN0000221(PolyOne Elastomers) discharges to an unnamed trib to North Fork Forked Deer River @ RM 6.2
- TN0064017 (Dr. Pepper/Pepsi-Cola Bottling Co.) discharges to an unnamed trib to Pond Creek @ RM 1.2
- TN0072966 (Trunkline Gas Co.) discharges to an unnamed trib to Nash Creek @ RM 3.0

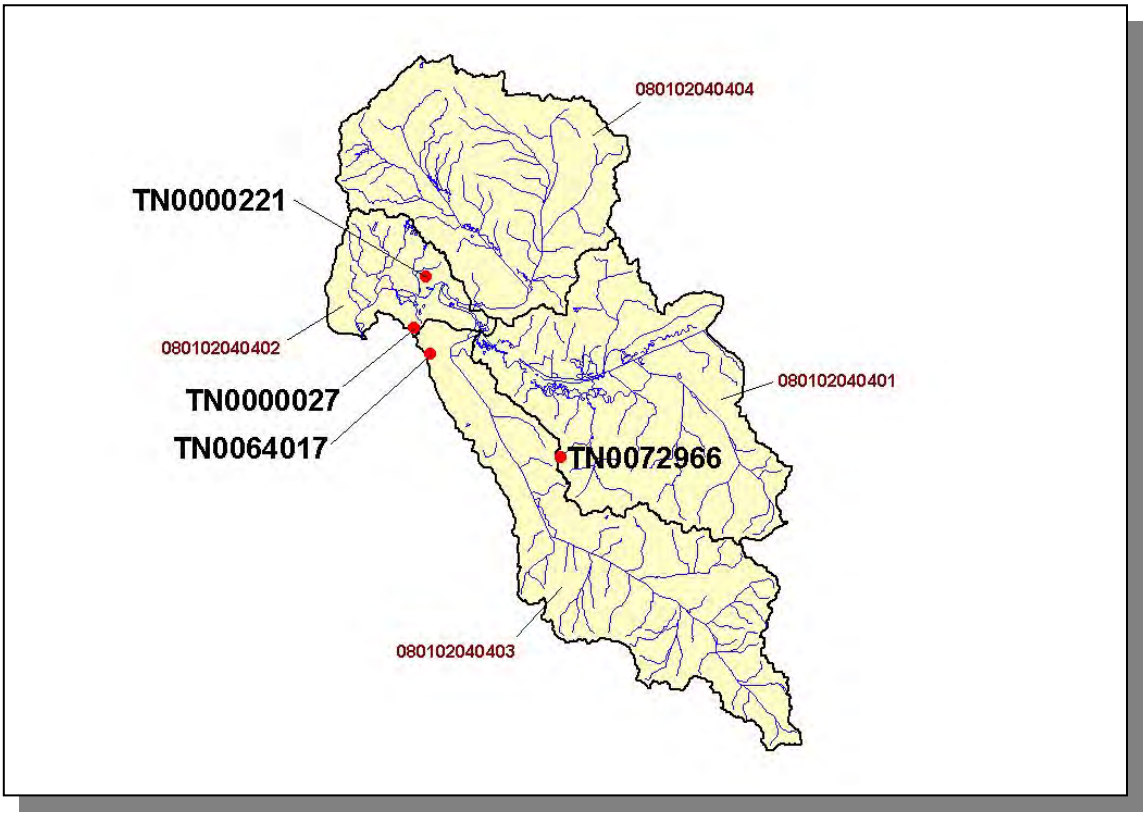



***Figure 4-47. Location of NPDES Dischargers to Water Bodies Listed on the 1998 303(d) List in Subwatershed 0801020404.*** *Subwatershed 080102040401, 080102040402,*

*080102040403, and 080102040404 boundaries are shown for reference. The names of facilities are provided in NFFD-Appendix IV.*

| PERMIT # | 1Q10 | 3Q10 | 7Q10 | 3Q20 | QDESIGN |
|---|---|---|---|---|---|
| TN0000027 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14000 |
| TN0000221 | | | | 0.00 | 0.04300 |
| TN0064017 | | | | | 0.03600 |
| TN0072966 | | | 0.00 | | 0.02500 |

***Table 4-29. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020404.*** *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 | $BOD_5$ | COD | pH | Zn | OIL and GREASE | $NH_3$ |
|---|---|---|---|---|---|---|---|
| TN0000221 | X | X | X | X | X | X | X |

***Table 4-30. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020404.*** *TSS, Total Suspended Solids; $BOD_5$, Biochemical Oxygen Demand (5-Day); COD, Chemical Oxygen Demand.*

| PERMIT # | pH | PCB | TRC | OIL and GREASE | TSS |
|---|---|---|---|---|---|
| TN0000027 | X | | X | X | |
| TN0064017 | X | | X | | X |
| TN0072966 | X | X | | X | X |

***Table 4-31. Parameters Monitored for Daily Maximum (mg/L) Limits for NPDES Dischargers to Waterbodies Listed on the 1998 303(d) List in Subwatershed 0801020404.***

4.2.D.iii. Nonpoint Source Contributions.

| LIVESTOCK (COUNTS) | | | | | | |
|---|---|---|---|---|---|---|
| Beef Cow | Milk Cow | Cattle | Chickens | Chickens Sold | Hogs | Sheep |
| | | | | | | |
| 807 | 2 | 6,679 | 7 | 0 | 630 | 9 |

Table 4-32. Summary of Livestock Count Estimates in Subwatershed 0801020404. *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) |
| | | | | |
| Crockett | 15.1 | 15.1 | 0.3 | 1.6 |
| Dyer | 40.4 | 40.4 | 0.8 | 2.8 |
| Total | 55.5 | 55.5 | 1.1 | 4.4 |

***Table 4-33. Forest Acreage and Average Annual Removal Rates (1987-1994) in Subwatershed 0801020404.***

| CROPS | TONS/ACRE/YEAR |
|---|---|
| Forest Land (Grazed) | 0.00 |
| Forest Land (Not Grazed) | 0.00 |
| Corn (Row Crops) | 6.30 |
| Soybeans (Row Crops) | 8.09 |
| Cotton (Row Crops) | 7.59 |
| Sorghum (Row Crops) | 5.90 |
| Wheat (Close Grown Cropland) | 3.88 |
| Oats (Close Grown Cropland) | 3.34 |
| Grass (Hayland) | 0.19 |
| Grass (Pastureland) | 1.39 |
| Grass, Forbs, Legumes (Mixed Pasture) | 0.32 |
| Conservation Reserve Program Land | 0.45 |
| Other Land in Farms | 0.15 |
| Other Cropland not Planted | 1.36 |
| Farmsteads and Ranch Headquarters | 0.95 |

***Table 4-34. Annual Soil Loss in Subwatershed 0801020404.***

# CHAPTER 5

## WATER QUALITY PARTNERSHIPS IN THE NORTH FORK FORKED DEER 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 North Fork Forked Deer 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 Measurement System (PRMS) 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 PRMS may be viewed at http://prms.nrcs.usda.gov/prms. From the opening menu, select "Reports," then select the Conservation Treatment of interest on the page that comes up. Select the desired location and time period from the drop down menus and choose "Refresh." Choose "by HUC" in the "Location" option and choose "Refresh" again.

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 |
|---|---|
| Comprehensive Nutrient Management Plans (Number) | 0 |
| Conservation Buffers (Acres) | 99 |
| Erosion Reduction (Tons/Year) | 185,255 |
| Inventory and Evaluations (Number) | 41 |
| Irrigation Management (Acres) | 0 |
| Nutrient Management (Acres) | 9,135 |
| Pest Management (Acres) | 9,792 |
| Prescribed Grazing (Acres) | 182 |
| Residue Management (Acres) | 6,845 |
| Tree and Shrub Practices (Acres) | 110 |
| Waste Management (Number) | 0 |
| Wetlands Created, Restored, or Enhanced (Acres) | 221 |
| Wildlife Habitat (Acres) | 3,048 |

***Table 5-1. Landowner Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period. More information is provided in NFFD-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 89 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/).

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. For a complete listing of endangered and threatened species in the North Fork Forked Deer River watershed, please visit the Service's website at http://www.cookeville.fws.gov.

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 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 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, 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 Cookeville Ecological Services Field Office at 931/528-6481 or visit their website at http://www.cookeville.fws.gov.

**5.2.D.** United States Army Corps of Engineers-Memphis District. Memphis is one of six districts in the Mississippi Valley Division of the Corps of Engineers. The District's area of responsibility encompasses 25,000 square miles, portions of six states, 15 major drainage basins, and approximately 3 million citizens. Responsibilities also include maintaining a 355-mile, 9-feet deep, and 300-feet wide Mississippi River channel from Cairo, Illinois to the mouth of the White River in Arkansas.

The Memphis District serves the Nation by planning, designing, constructing and operating high quality and reasonably priced Civil Works water resource projects, primarily in the major mission areas of flood damage reduction, navigation, and environmental restoration and stewardship. The Corps' ongoing Civil Works responsibilities date back to the early 1800's when Congress authorized the removal of navigation hazards and obstacles in the early years of the nation's development. Over the years, succeeding Administrations and Congresses have expanded the Corps' missions to include most all water-related planning, development, and construction areas where a Federal interest is involved. Funds for Civil Works are provided through annual Energy and Water Appropriations Acts and through contributions from non-Federal entities for planning and /or construction of specific projects. All Civil Works projects involve a non-Federal, cost sharing sponsor.

Civil Works projects may also be funded under the Continuing Authorities Program (CAP). Congress has provided the Corps with standing authorities to study and build specific water resource projects for specific purposes and with specified spending limits. The CAP projects are implemented in a faster time frame, are limited in complexity, have Federal cost limits determined by the specific authority, are approved by the Division Commander, and do not need Congressional authorization.

The West Tennessee Tributaries flood control project is located along the Obion, Forked Deer Rivers, and their tributaries. The project sponsor is the State of Tennessee acting through the West Tennessee Basin Authority. The project involves 225 miles of flood control improvements on the Obion and Forked Deer Rivers and construction of 7.6 miles of levees, 174 water control structures, 216 erosion control structures, 37 miles of water management connector channels to restore bottomland hardwoods and fisheries, and the acquisition of 32,000 acres of mitigation.

Ninety-three miles of flood control improvements were completed before the project was halted by a lawsuit in 1973. Approximately 13,500 acres of mitigation have been acquired. The project is currently on hold pending the resolution of issues.

To obtain additional information about the District, please refer to the home page at: http://www.mvm.usace.army.mil, or contact the following offices:

| | |
|---|---|
| Public Affairs Office (General Information): | (901) 544-3348 |
| Regulatory Branch: | (901) 544-3473 |
| Planning, Programs, and Project Management Branch: | (901) 544- 0658 |
| Continuing Authorities Program: | (901) 544-0798 |
| Environmental Analysis Branch: | (901) 544-3857 |

## 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 are 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.

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.

**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.

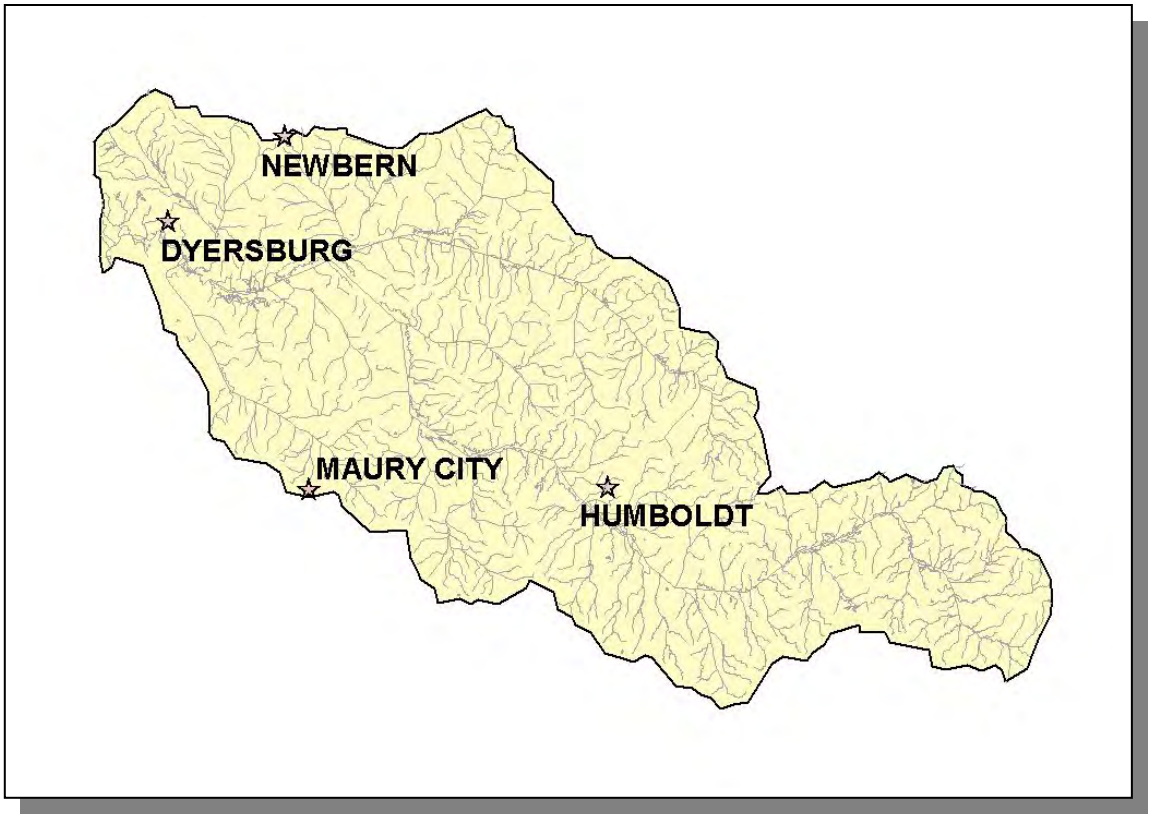



***Figure 5-1. Location of Communities Receiving SRF Loans or Grants in the North Fork Forked Deer River Watershed.*** *More information is provided in NFFD-Appendix V.*

**5.3.C.** West Tennessee River Basin Authority. The West Tennessee River Basin Authority, an agency of the Department of Environment and Conservation, is responsible for the preservation of the natural flow and function of rivers and streams in the Forked Deer, Obion and Hatchie River Basins. As a Water Quality Partner, the Basin Authority conducts a variety of activities directly related to the conservation of resources in these river basins. In carrying out its mission the Basin Authority:

- Pursues and implements meandering stream and river restoration projects, with the goal of restoring natural floodplain dynamics and the associated riverine ecosystems.
- Implements watershed level projects designed to reduce the volume of sediment entering streams, and rivers. Excessive sedimentation can severely impair water quality as well as aquatic and floodplain habitats.
- Performs environmentally sensitive removal of logjams and obstructions to flow in streams and rivers, resulting in the preservation of environmental and economic resources.
- Maintains 110 Flood Control and Sediment Retention Structures, designed to increase flood storage capacity and to improve water quality through removal of suspended sediments.
- In support of its work, receives donations of Conservation Easements on Bottomland Hardwood Timber and other Wetlands. To date, over 23 square miles have been donated to the Basin Authority by private landowners.
- Maintains several large Bank Stabilization Projects in the Obion and Forked Deer River Systems, designed to prevent severe bank erosion. Where feasible, the Basin Authority utilizes bioengineering techniques to stabilize river banks, while, at the same time, reestablishing the riparian corridor.
- Maintains several Grade Control Structures designed to prevent further vertical degradation of altered streams and rivers. These structures, not only protect vital infrastructure, but help prevent the release of large volumes of sediment.

Through its efforts, the West Tennessee River Basin Authority will remain a strong advocate for the conservation and sustainable utilization of the resources within the Hatchie, Obion and Forked Deer River Basins.

The West Tennessee River Basin Authority office is located at 3628 East End Drive in Humboldt, Tennessee. For additional information or assistance, call 731/784-8173.

**5.3.D.** 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 North Fork Forked Deer River Watershed was funded under an agreement with the Tennessee Department of Agriculture, Nonpoint Source Program, and the U.S. Environmental Protection Agency Assistance Agreements C9994674-99-0, C9994674-00-0, and C9994674-01-0.

- 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 about the joint policy to address Bad Actors in forestry operations is available at http://www.state.tn.us/environment/news/release/jan99/badact.htm

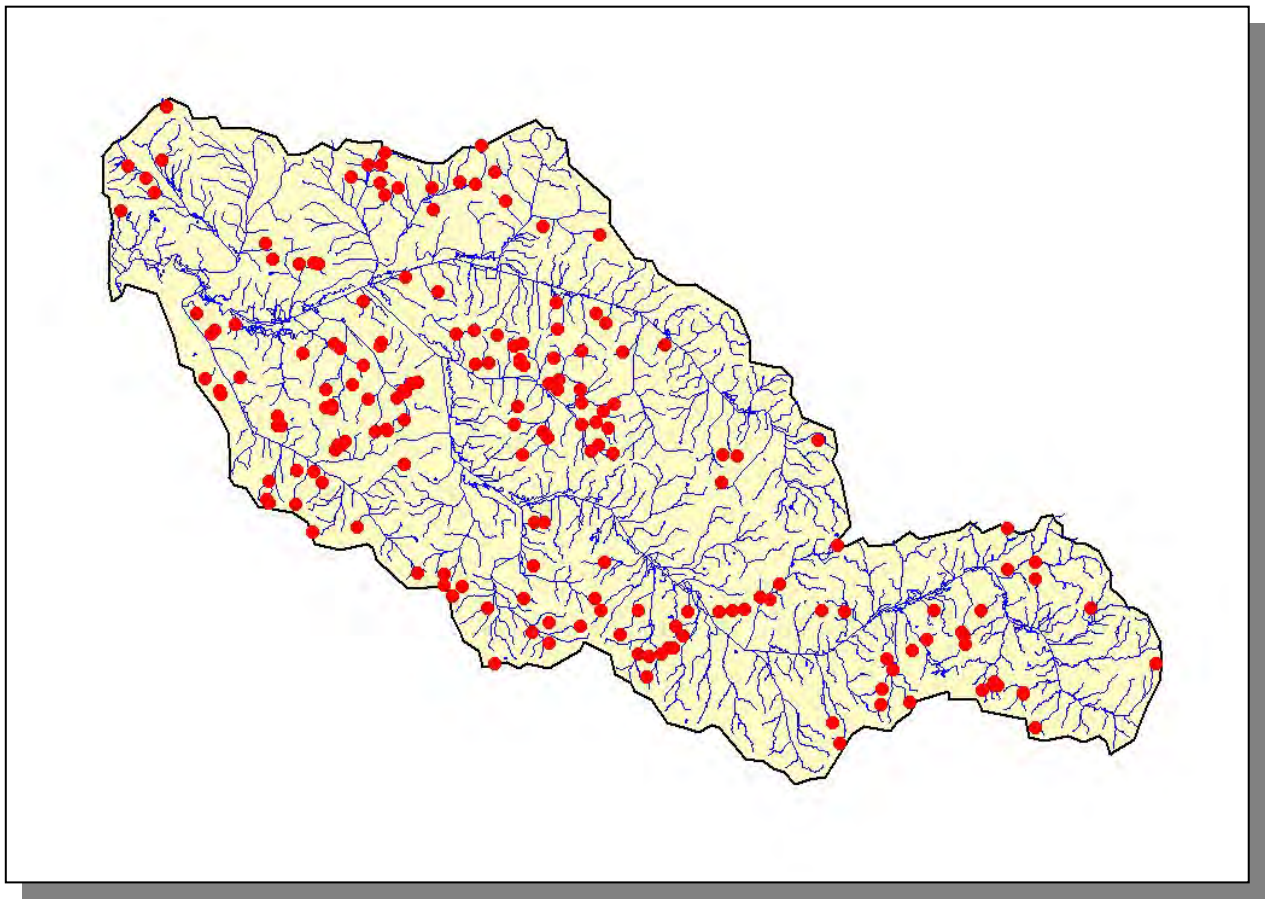


***Figure 5-2. Location of BMPs installed from 1999 through 2002 in the North Fork Forked Deer River Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs.***

# CHAPTER 6

## FUTURE DIRECTIONS IN THE NORTH FORK FORKED DEER 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 stormwater rules (implemented under the NPDES program) are transitioning from Phase 1 to Phase 2. More information on stormwatrer 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 North Fork Forked Deer River Watershed as well as specific NPDES permittee information.

**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 frequently 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: http://www.state.tn.us/environment/wpc/public.htm.

6.2.A. Year 1 Public Meeting. The first North Fork Forked Deer River Watershed public meeting was held April 15, 1997 in Humboldt. 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

- Lack of watershed associations in West Tennessee
- Need better coordination between all agencies doing sampling
- Need increased limits if wasteload allocations support it

6.2.B. Year 5 Public Meeting. The third scheduled North Fork Forked Deer River Watershed public meeting was held October 6, 2003 at the Humboldt Municipal Center (the meeting was for the Forked Deer and North Fork Forked Deer River Watersheds). The meeting featured five 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

In addition, citizens had the opportunity to make formal comments on the draft Watershed Water Quality Management Plan and to rate the effectiveness of the meeting.

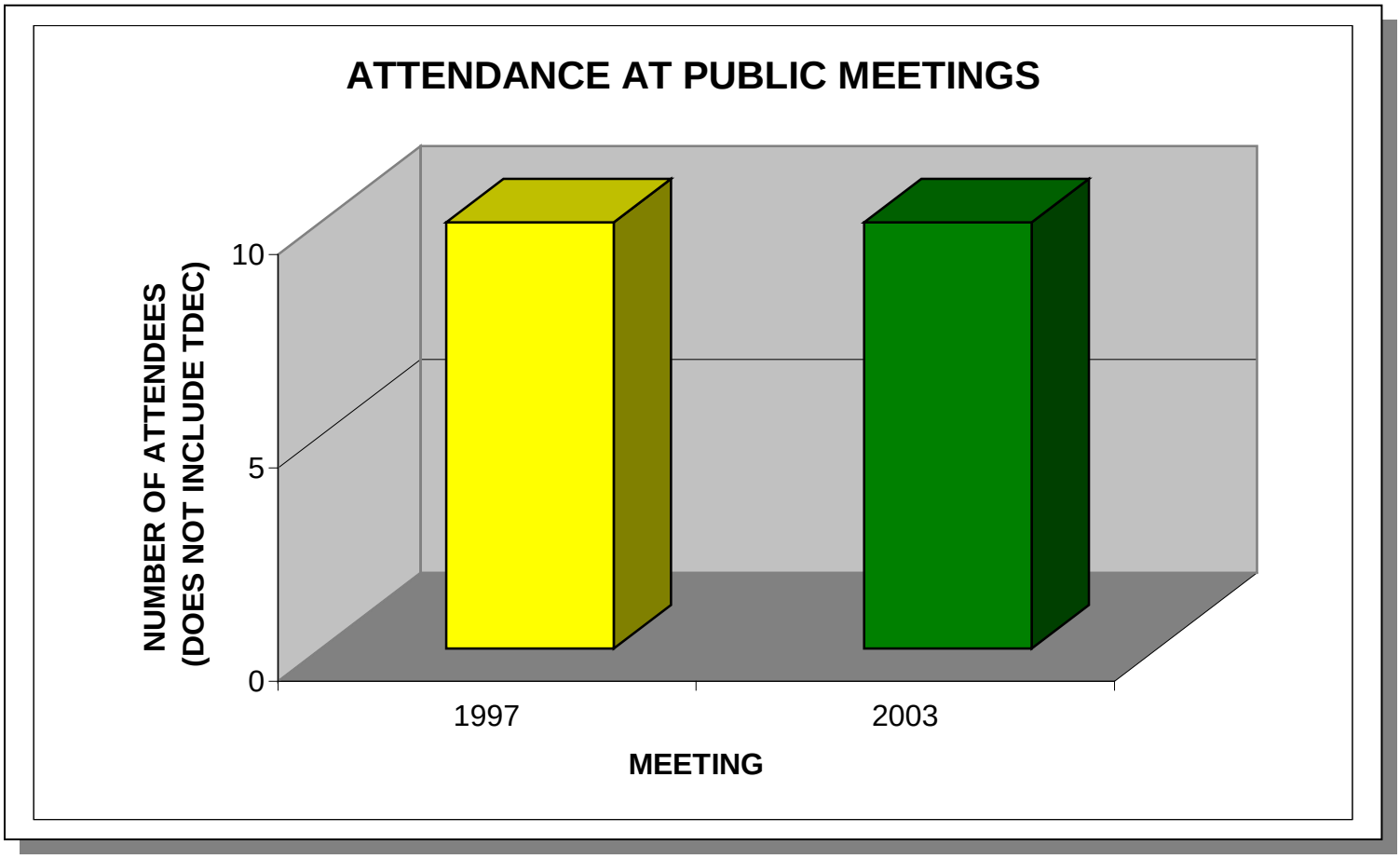



***Figure 6-1. Attendance at Public Meetings in the North Fork Forked Deer River Watershed.*** *Watershed meeting numbers represent North Fork Forked Deer River and Forked Deer River Watersheds joint meetings.*

***Figure 6-2. The SmartBoard™ is an effective interactive tool to teach citizens about the power of GIS.***

## 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.php

Approved TMDL:

**North Fork Forked Deer River and Turkey Creek TMDL.** TMDL for fecal coliform in the North Fork Forked Deer River Watershed approved May 10, 2002: http://www.state.tn.us/environment/wpc/nffdrfecal02.pdf

TMDLs are prioritized for development based on many factors.

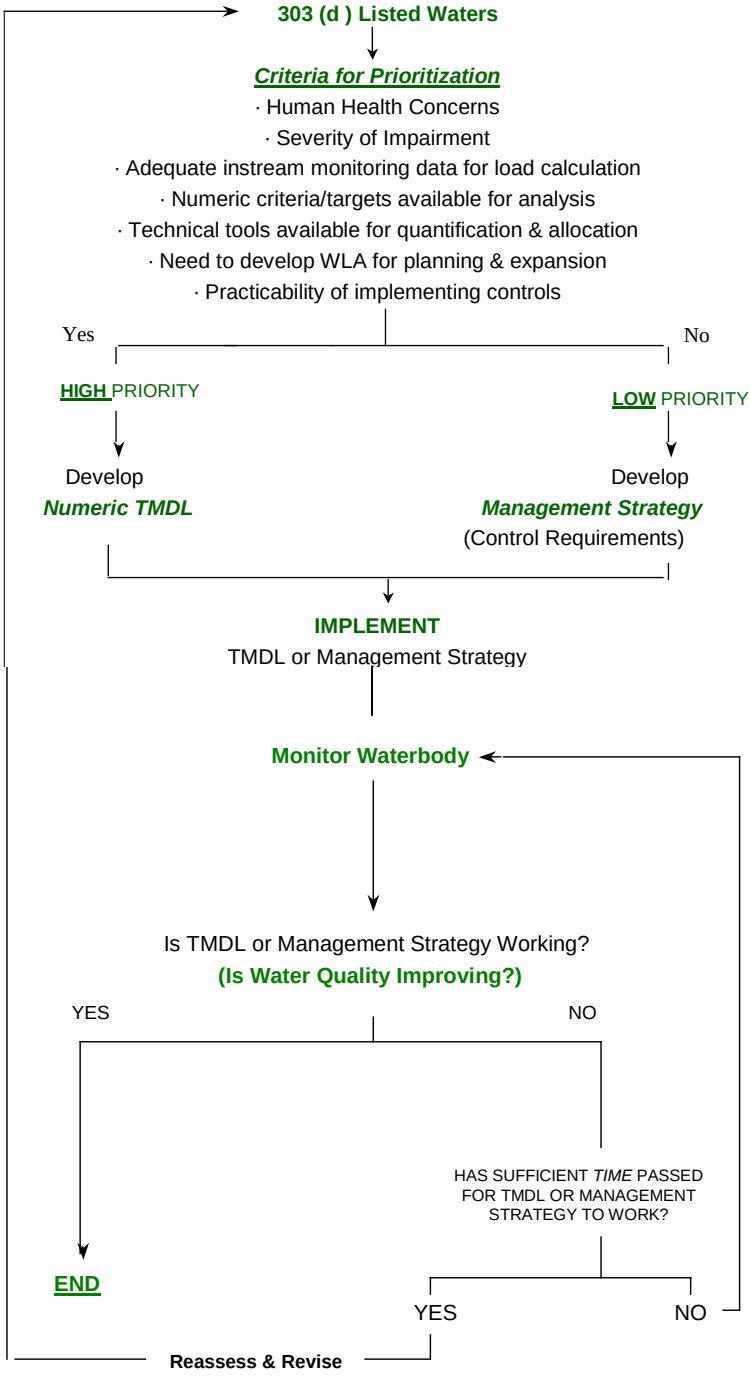



***Figure 6-3. Prioritization scheme for TMDL Development.***

## 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 and drains to a stream, existing point source regulations can have only a limited effect, so other measures are necessary.

There are several state and federal regulations that address some of the contaminants impacting waters in the North Fork Forked Deer 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 voluntary efforts by landowners and volunteer groups, while others may involve new regulations. Many agencies, including the Tennessee Department of Agriculture and 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 certain types of impairments, causes, suggested improvement measures, and control strategies. The suggested measures and streams are only examples and efforts should not be limited to only those streams and measures mentioned.

### 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 are disturbed. In the spring of 2003, that threshold became 1 acre. The general permit issued for such construction sites sets out conditions for maintenance of the sites to minimize pollution from stormwater 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. 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. Examples of these streams are Lewis Creek and Dyer Creek in Madison County.

The same requirements apply to sites in the drainage of high quality waters. Griffin Creek is an example of a high quality stream in the Middle Fork of the Forked Deer River subwatershed.

6.3.B.i.b. From Channel and/or Bank Erosion. Due to the past channelization of the North and Middle Forks of the Forked Deer River and many of its tributaries, the channels are unstable. Several agencies are working to stabilize portions of stream banks. These

include NRCS, TDOT, the U.S. Army Corps of Engineers, and the West Tennessee River Basin Authority. Other methods or controls that might be necessary to address common problems are:

*Voluntary activities*

- Re-establishment of bank vegetation and riparian zones (examples: the upper reach of Pond Creek).
- Establish off-channel watering areas for cattle by moving watering troughs and feeders back from stream banks.
- Limit cattle access to streams and bank vegetation.
- Allow streams to reestablish a natural channel within its floodplain.

*Additional strategies*

- Increase efforts in the Master Logger program to recognize impaired streams and require more effective management practices.
- Better community planning for the impacts of development on small streams (examples: Lewis Creek, Moize Creek, and Dyer Creek).
- Restrictions requiring post-construction run-off rates to be no greater than pre-construction rates in order to avoid in-channel erosion (examples: Moize Creek and Lewis Creek).
- Additional restrictions on logging in streamside management zones.
- Prohibition on clearing of stream and ditch banks (examples: Pond Creek and Lewis Creek). *Note: Permits may be required for any work along streams.*
- Additional restriction to road and utilities crossings of streams.
- Requirement that levees have a set-back that leaves an adequate floodway along streams (examples: Pond Creek, Bethel Branch, Doakville Branch).
- Cease the maintenance efforts on channelized segments of streams where a natural, stable channel can be established.

6.3.B.i.c. From Agriculture and Silviculture. Even though there is an exemption in the Water Quality Control Act stating that normal agricultural and silvicultural practices which do not result in a point source discharge do not have to obtain a permit, efforts are being made to address impacts due to these practices.

The Master Logger Program has been in place for several years to train loggers how to plan their logging activities and to install Best Management Practices (BMPs) that lessen the impact of logging activities. Recently, laws and regulations were enacted which established the expected BMPs to be used and allows the Commissioners of the Departments of Environment and Conservation and of Agriculture to stop a logging operation that has failed to install these BMPs and so are impacting streams. Any timber harvest in the North and Middle Forks of the Forked Deer Rivers are small and isolated.

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 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. Buck Creek has already

had several BMPs installed to address the sediment lost from fields in this watershed. Pond Creek, Bethel Branch, and Doakville Creek could all benefit from agricultural BMPs.

### 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 in streams and storm drains due to pets, livestock and wildlife. 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. Septic tank and field lines are regulated by the Division of Ground Water Protection within TDEC and delegated county health departments. In Madison County, subsurface systems are regulated by the Jackson-Madison County Health Department. In addition to discharges to surface waters, businesses may employ either subsurface or surface disposal of wastewater (spray irrigation). The Division of Water Pollution Control regulates surface disposal.

Other measures that may be necessary to control pathogens are:

*Voluntary activities*

- Off-channel watering of livestock.
- Limiting livestock access to streams.
- Proper management of animal waste from feeding operations or stables.

*Enforcement strategies*

- Greater enforcement of regulations governing onsite wastewater treatment.
- Timely and appropriate enforcement of noncomplying sewage treatment plants and collection systems.
- Identification of Concentrated Animal Feeding Operations not currently permitted, and enforcement of current regulations.

*Additional strategies*

- Restrict development 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 (example: Moize Creek).
- Greater efforts by sewer utilities to identify leaking lines or overflowing manholes (example: Lewis Creek).

### 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 and from fertilized lawns and croplands.

Other sources of nutrients can be addressed by:

*Voluntary activities*

- Encourage no-till farming (example: Pond Creek).
- Encourage farmers to use the proper rate of fertilizer for the soil and crop.
- 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.
- Use grassed drainage ways that can remove fertilizer before it enters streams.
- 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 (Pond Creek suffers from canopy removal).
- Discourage impoundments. Ponds and lakes do not aerate water. *Note: Permits may be required for any work on a stream, including impoundments.*

6.3.B.iv. Toxins and Other Materials.

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 examples of pollution in streams. Some can be addressed by:

*Voluntary activities*

- Providing public education.
- Painting warnings on storm drains that connect to a stream (examples: Moize and Dyer Creeks).
- Sponsoring community clean-up days (examples: Light Creek, Lewis Creek, and Bethel Creek).
- Landscaping of public areas.
- Encouraging public surveillance of their streams and reporting of dumping activities to their local authorities.

*Needing regulation*

- Prohibition of illicit discharges to storm drains.
- Litter laws and strong 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.

Measures that can help address this problem are:

*Voluntary activities*

- Sponsoring litter pickup days to remove litter that might enter streams.
- Organizing stream cleanups removing trash, limbs and debris before they cause blockage (example: Jones Creek).
- Avoiding use of heavy equipment to "clean out" streams (example: Pond Creek).
- Planting vegetation along streams to stabilize banks and provide habitat.
- Encouraging developers to avoid extensive culverts in streams.

*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 regulations*

- Increased enforcement may be needed when violations of current regulations occur.
- Pass laws prohibiting the construction of levees within a set distance from a stream.

## 6.4. PERMIT REISSUANCE PLANNING

Under the *Tennessee Water Quality Control Act*, municipal, industrial and other dischargers of wastewater must obtain a permit from the Division. Approximately 1,700 permits have been issued in Tennessee under the federally delegated National Pollutant Discharge Elimination System (NPDES). These permits establish pollution control and monitoring requirements based on protection of designated uses through implementation of water quality standards and other applicable state and federal rules.

The following three sections provide specific information on municipal, industrial, and water treatment plant active permit holders in the North Fork Forked Deer River Watershed. Compliance information was obtained from EPA's Permit Compliance System (PCS). All data was queried for a five-year period between January 1, 2001 and December 31, 2006. PCS can be accessed publicly through EPA's Envirofacts website. This website provides access to several EPA databases to provide the public with information about environmental activities that may affect air, water, and land anywhere in the United States:

http://www.epa.gov/enviro/html/ef_overview.html

Stream Segment information, including designated uses and impairments, are described in detail in Chapter 3, *Water Quality Assessment of the North Fork Forked Deer River Watershed*.

## 6.4.A. Municipal Permits

### TN0075876 Jackson Energy Authority - Middle Fork Sewage Treatment Plant

**Discharger rating:** Major
**City:** Jackson
**County:** Madison
**EFO Name:** Jackson
**Issuance Date:** 8/9/04
**Expiration Date:** 7/31/07
**Receiving Stream(s):** Middle Fork Forked Deer River Mile 29.1
**HUC-12:** 080102040105
**Effluent Summary:** Treated municipal wastewater from Outfall 001
**Treatment system:** Treatment consists of mechanically cleaned bar screens, mechanically cleaned filter screens, grit removal, cyclical aeration, chlorination, and post aeration. WAS to aerobic digester to liquid injection to land application sites.

| | |
|---|---|
| **Segment** | TN08010204010_2000 |
| **Name** | Middle Fork Forked Deer River |
| **Size** | 8.5 |
| **Unit** | Miles |
| **First Year on 303(d) List** | - |
| **Designated Uses** | Fish and Aquatic Life (Supporting), Recreation (Supporting), Livestock Watering and Wildlife (Supporting), Irrigation (Supporting) |
| **Causes** | N/A |
| **Sources** | N/A |

***Table 6-1. Stream Segment Information for Jackson Energy Authority - Middle Fork Sewage Treatment Plant***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | Summer | 8 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 4 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 6 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 200 | lb/day | WAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 133 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 16 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 266 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 400 | lb/day | WAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 12 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 8 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| CBOD % Removal | All Year | 40 | Percent | DMin % Removal | Monthly | Calculated | % Removal |
| CBOD % Removal | All Year | 85 | Percent | MAvg % Removal | Monthly | Calculated | % Removal |
| CBOD5 | All Year | | mg/L | DMax Conc | 3/Week | Composite | Intake |
| CBOD5 | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Intake |
| CBOD5 | Summer | 30 | mg/L | DMax Conc | 3/Week | Composite | Effluent |

***Tables 6-2a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| CBOD5 | Summer | 15 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 500 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 667 | lb/day | WAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 20 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 45 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 22.5 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 1134 | lb/day | WAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 34 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 751 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | 3/Week | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | 3/Week | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | 3/Week | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Composite | Influent (Raw Sewage) |
| Flow | All Year | | MGD | MAvg Load | Daily | Composite | Effluent |
| Flow | All Year | | MGD | MAvg Load | Daily | Composite | Influent (Raw Sewage) |
| Flow | All Year | | MGD | DMax Load | Daily | Composite | Effluent |
| IC25 7day Ceriodaphnia Dubia | All Year | 12 | Percent | DMin Conc | Quarterly | Composite | Effluent |
| IC25 7day Fathead Minnows | All Year | 12 | Percent | DMin Conc | Quarterly | Composite | Effluent |
| Nitrogen Total (as N) | All Year | | mg/L | DMax Conc | Quarterly | Composite | Effluent |
| Phosphorus, Total | All Year | | mg/L | DMax Conc | Quarterly | Composite | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | 3/Week | Grab | Effluent |
| TRC | All Year | 0.16 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | | mg/L | DMax Conc | 3/Week | Composite | Intake |
| TSS | All Year | 45 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| TSS | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Intake |
| TSS | All Year | 1001 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| TSS | All Year | 1334 | lb/day | WAvg Load | 3/Week | Composite | Effluent |
| TSS | All Year | 40 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| TSS | All Year | 30 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| TSS % Removal | All Year | 85 | Percent | MAvg % Removal | Monthly | Calculated | % Removal |
| TSS % Removal | All Year | 40 | Percent | DMin % Removal | 3/Week | Calculated | % Removal |
| pH | All Year | 9 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-2b.***

***Tables 6-2a-b. Permit Limits for Jackson Energy Authority - Middle Fork STP***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 3 Settleable Solids
- 1 Ammonia
- 1CBOD
- 2 Suspended Solids % Removal
- 3 TSS
- 47 Overflows
- 4 Bypasses

***EFO Comments:***
No Issues.

## TN0024988 Alamo STP

**Discharger rating:** Minor
**City:** Alamo
**County:** Crockett
**EFO Name:** Jackson
**Issuance Date:** 5/31/02
**Expiration Date:** 5/31/07
**Receiving Stream(s):** Unnamed tributary to Buck Creek at mile 4.5 then to the Forked Deer at mile 118
**HUC-12:** 080102040203
**Effluent Summary:** Treated municipal wastewater from Outfall 001
**Treatment system:** WAS to aerobic digester to dry beds to land application

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | Summer | 2.5 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 6.7 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 2 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 1.1 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 3.7 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 4 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 3 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 6.7 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 2 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 10.1 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| Bypass of Treatment (occurrences) | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |
| CBOD % Removal | All Year | 40 | Percent | DMin % Removal | 3/Week | Calculated | % Removal |
| CBOD % Removal | All Year | 85 | Percent | MAvg % Removal | 3/Week | Calculated | % Removal |
| CBOD5 | All Year | 20 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| CBOD5 | All Year | 10 | mg/L | DMin Conc | 3/Week | Composite | Effluent |
| CBOD5 | All Year | 51 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| CBOD5 | All Year | | mg/L | DMax Conc | 3/Week | Composite | Influent (Raw Sewage) |
| CBOD5 | All Year | 15 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | All Year | 34 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Influent (Raw Sewage) |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | 3/Week | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | 3/Week | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | 3/Week | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Continuous | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Continuous | Influent (Raw Sewage) |
| Flow | All Year | | MGD | MAvg Load | Daily | Continuous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Daily | Continuous | Influent (Raw Sewage) |
| IC25 7day Ceriodaphnia Dubia | All Year | 100 | Percent | DMin Conc | Quarterly | Composite | Influent (Raw Sewage) |

***Table 6-3a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| IC25 7day Ceriodaphnia Dubia | All Year | 100 | Percent | DMin Conc | Monthly | Composite | Effluent |
| IC25 7day Fathead Minnows | All Year | 100 | Percent | DMin Conc | Quarterly | Composite | Influent (Raw Sewage) |
| IC25 7day Fathead Minnows | All Year | 100 | Percent | DMin Conc | Monthly | Composite | Effluent |
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Non Wet Weather |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | 3/Week | Composite | Effluent |
| TRC | All Year | 0.02 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 45 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| TSS | All Year | | mg/L | DMax Conc | 3/Week | Composite | Influent (Raw Sewage) |
| TSS | All Year | 135 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| TSS | All Year | 40 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| TSS | All Year | 101 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| TSS | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Influent (Raw Sewage) |
| TSS | All Year | 30 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| TSS % Removal | All Year | 40 | Percent | DMin % Removal | 3/Week | Calculated | % Removal |
| TSS % Removal | All Year | 85 | Percent | MAvg % Removal | 3/Week | Calculated | % Removal |
| pH | All Year | 9 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-3b.***

***Tables 6-3a-b. Permit Limits for Alamo Sewage Treatment Plant.***

### *Compliance History:*

The following numbers of exceedences were noted in PCS:

- 3 Ammonia
- 3 CBOD
- 2 Chlorine
- 6 Overflows
- 5 Bypasses

### *EFO Comments:*

No Issues.

## TN0021563 Dyer STP

**Discharger rating:** Minor
**City:** Dyer
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** 12/29/06
**Expiration Date:** 7/31/07
**Receiving Stream(s):** Sand Creek at mile 1.6
**HUC-12:** 080102040304
**Effluent Summary:** Treated municipal wastewater from Outfall 001
**Treatment system:** WAS to dry bed to landfill

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | Summer | 2 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 8.4 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 1.5 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 0.9 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 5.1 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 4 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 3 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 9.6 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 1.7 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 16.9 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| Bypass of Treatment (occurrences) | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |
| CBOD % Removal | All Year | 40 | Percent | DMin % Removal | 3/Week | Calculated | % Removal |
| CBOD % Removal | All Year | 65 | Percent | MAvg % Removal | 3/Week | Calculated | % Removal |
| CBOD5 | All Year | | mg/L | DMax Conc | 3/Week | Composite | Influent (Raw Sewage) |
| CBOD5 | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Influent (Raw Sewage) |
| CBOD5 | Summer | 10 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 7.5 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 28 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 5 | mg/L | DMin Conc | 3/Week | Composite | Effluent |
| CBOD5 | Summer | 42 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 15 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 56 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 7.5 | mg/L | DMin Conc | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 42 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| CBOD5 | Winter | 10 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 941 | #/100mL | DMax Conc | 3/Week | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | 3/Week | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Continuous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Daily | Continuous | Effluent |
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Non Wet Weather |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | Weekdays | Composite | Effluent |
| TRC | All Year | 0.02 | mg/L | DMax Conc | Weekdays | Grab | Effluent |

***Table 6-4a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| TSS | All Year | 45 | mg/L | DMax Conc | 3/Week | Composite | Effluent |
| TSS | All Year | | mg/L | DMax Conc | 3/Week | Composite | Influent (Raw Sewage) |
| TSS | All Year | 225 | lb/day | DMax Load | 3/Week | Composite | Effluent |
| TSS | All Year | 40 | mg/L | MAvg Conc | 3/Week | Composite | Effluent |
| TSS | All Year | 169 | lb/day | MAvg Load | 3/Week | Composite | Effluent |
| TSS | All Year | | mg/L | MAvg Conc | 3/Week | Composite | Influent (Raw Sewage) |
| TSS | All Year | 30 | mg/L | WAvg Conc | 3/Week | Composite | Effluent |
| TSS % Removal | All Year | 40 | Percent | DMin % Removal | 3/Week | Calculated | % Removal |
| TSS % Removal | All Year | 65 | Percent | MAvg % Removal | 3/Week | Calculated | % Removal |
| pH | All Year | 8.5 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-4b.***

***Tables 6-4a-b. Permit Limits for Dyer STP.***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 27 Ammonia
- 30 CBOD
- 6 E. coli
- 4 Suspended Solids % Removal
- 6 Chlorine
- 2 TSS
- 5 Dissolved Oxygen
- 7 pH
- 2 COD
- 21 overflows
- 3 bypasses.

***EFO Comments:***
No Issues.

## TN0023477 Dyersburg STP

**Discharger rating:** Major
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 12/30/02
**Expiration Date:** 12/30/07
**Receiving Stream(s):** North Fork Forked Deer River at mile 2.8
**HUC-12:** 080102040402
**Effluent Summary:** Treated municipal wastewater from Outfall 001
**Treatment system:** WAS to aerobic digester to land application sites

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ag (T) | All Year | 0.001 | mg/L | DMax Conc | Semi-annually | Composite | Effluent |
| Ammonia as N (Total) | Summer | 3 | mg/L | DMax Conc | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 181 | lb/day | DMax Load | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 2.3 | mg/L | MAvg Conc | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 1.5 | mg/L | WAvg Conc | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Summer | 118 | lb/day | MAvg Load | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 20 | mg/L | DMax Conc | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 969 | lb/day | MAvg Load | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 1261 | lb/day | DMax Load | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 12.3 | mg/L | WAvg Conc | 2/Week | Composite | Effluent |
| Ammonia as N (Total) | Winter | 16 | mg/L | MAvg Conc | 2/Week | Composite | Effluent |
| CBOD % Removal | All Year | 40 | Percent | DMin % Removal | Weekly | Calculated | % Removal |
| CBOD % Removal | All Year | 85 | Percent | MAvg % Removal | Weekly | Calculated | % Removal |
| CBOD5 | Summer | 20 | mg/L | DMax Conc | 2/Week | Composite | Effluent |
| CBOD5 | Summer | 15 | mg/L | MAvg Conc | 2/Week | Composite | Effluent |
| CBOD5 | Summer | 1182 | lb/day | DMax Load | 2/Week | Composite | Effluent |
| CBOD5 | Summer | 10 | mg/L | DMin Conc | 2/Week | Composite | Effluent |
| CBOD5 | Summer | 788 | lb/day | MAvg Load | 2/Week | Composite | Effluent |
| CBOD5 | Winter | 40 | mg/L | DMax Conc | 2/Week | Composite | Effluent |
| CBOD5 | Winter | 1970 | lb/day | MAvg Load | 2/Week | Composite | Effluent |
| CBOD5 | Winter | 35 | mg/L | MAvg Conc | 2/Week | Composite | Effluent |
| CBOD5 | Winter | 25 | mg/L | DMin Conc | 2/Week | Composite | Effluent |
| CBOD5 | Winter | 2758 | lb/day | DMax Load | 2/Week | Composite | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | Weekdays | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Weekdays | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Weekdays | Grab | Effluent |
| IC25 7day Ceriodaphnia Dubia | All Year | 15 | Percent | DMin Conc | Quarterly | Composite | Effluent |
| IC25 7day Fathead Minnows | All Year | 15 | Percent | DMin Conc | Quarterly | Composite | Effluent |
| Nitrite + Nitrate Total (as N) | All Year | | mg/L | MAvg Conc | 2/Month | Composite | Effluent |
| Phosphorus, Total | All Year | | mg/L | MAvg Conc | 2/Month | Composite | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | Weekly | Grab | Effluent |
| TKN - Total Kjeldahl Nitrogen | All Year | | mg/L | MAvg Conc | 2/Month | Composite | Effluent |
| TKN - Total Kjeldahl Nitrogen | All Year | | lb/day | MAvg Load | 2/Month | Composite | Effluent |
| TRC | All Year | 0.14 | mg/L | DMax Conc | Weekdays | Grab | Effluent |

***Table 6-5a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| TSS | All Year | 45 | mg/L | DMax Conc | 2/Week | Composite | Effluent |
| TSS | All Year | 3153 | lb/day | DMax Load | 2/Week | Composite | Effluent |
| TSS | All Year | 30 | mg/L | WAvg Conc | 2/Week | Composite | Effluent |
| TSS | All Year | 2364 | lb/day | MAvg Load | 2/Week | Composite | Effluent |
| TSS | All Year | 40 | mg/L | MAvg Conc | 2/Week | Composite | Effluent |
| TSS % Removal | All Year | 40 | Percent | DMin % Removal | 2/Week | Calculated | % Removal |
| TSS % Removal | All Year | 85 | Percent | MAvg % Removal | 2/Week | Calculated | % Removal |
| pH | All Year | 9 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-5b.***

***Tables 6-5a-b. Permit Limits for Dyersburg STP.***

***Compliance History:***
None Noted

***EFO Comments:***
No Issues.

## TN0056481 East Elementary School

**Discharger rating:** Minor
**City:** Jackson
**County:** Madison
**EFO Name:** Jackson
**Issuance Date:** 4/30/02
**Expiration Date:** 4/30/07
**Receiving Stream(s):** Unnamed tributary at mile 1.7 to Middle Fork Forked Deer River at mile 35.1
**HUC-12:** 080102040104
**Effluent Summary:** Treated domestic wastewater from Outfall 001
**Treatment system:** Extended aeration; sludge to hauler as needed to Jackson WWTP

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | All Year | 10 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Ammonia as N (Total) | All Year | 5 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| CBOD5 | All Year | 30 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| CBOD5 | All Year | 20 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Monthly | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Monthly | Grab | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | 2/Week | Grab | Effluent |
| TRC | All Year | 0.5 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 45 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 30 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| pH | All Year | 8.5 | SU | DMax Conc | 2/Week | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | 2/Week | Grab | Effluent |

***Table 6-6. Permit Limits for East Elementary School.***

### *EFO Comments:*

New Superintendent may help resolve some of the school's wastewater issues.

## TN0058955 Friendship Sewage Treatment Plant

**Discharger rating:** Major
**City:** Friendship
**County:** Crockett
**EFO Name:** Jackson
**Issuance Date:** 8/30/02
**Expiration Date:** 8/30/07
**Receiving Stream(s):** Unnamed tributary at mile 0.3 to Miller Creek at mile 3.9
**HUC-12:** 080102040401
**Effluent Summary:** Treated domestic wastewater from Outfall 001
**Treatment system:** WAS to aerobic digester to dry beds to landfill

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | Summer | 1.8 | mg/L | DMax Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Summer | 1 | lb/day | DMax Load | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Summer | 1.35 | mg/L | MAvg Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Summer | 0.9 | mg/L | WAvg Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Summer | 0.68 | lb/day | MAvg Load | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Winter | 3.4 | mg/L | DMax Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Winter | 2.55 | mg/L | MAvg Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Winter | 1.28 | lb/day | MAvg Load | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Winter | 1.7 | mg/L | WAvg Conc | Weekly | Composite | Effluent |
| Ammonia as N (Total) | Winter | 1.9 | lb/day | DMax Load | Weekly | Composite | Effluent |
| Bypass of Treatment (occurrences) | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |
| CBOD % Removal | All Year | 40 | Percent | DMin % Removal | Weekly | Calculated | % Removal |
| CBOD % Removal | All Year | 85 | Percent | MAvg % Removal | Weekly | Calculated | % Removal |
| CBOD5 | All Year | 10 | mg/L | DMax Conc | Weekly | Composite | Effluent |
| CBOD5 | All Year | 5 | mg/L | DMin Conc | Weekly | Composite | Effluent |
| CBOD5 | All Year | 5.6 | lb/day | DMax Load | Weekly | Composite | Effluent |
| CBOD5 | All Year | | mg/L | DMax Conc | Weekly | Composite | Influent (Raw Sewage) |
| CBOD5 | All Year | 7.5 | mg/L | MAvg Conc | Weekly | Composite | Effluent |
| CBOD5 | All Year | 3.75 | lb/day | MAvg Load | Weekly | Composite | Effluent |
| CBOD5 | All Year | | mg/L | MAvg Conc | Weekly | Composite | Influent (Raw Sewage) |
| D.O. | All Year | 5 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Continuous | Effluent |
| Flow | All Year | | MGD | DMax Load | Daily | Continuous | Influent (Raw Sewage) |
| Flow | All Year | | MGD | MAvg Load | Daily | Continuous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Daily | Continuous | Influent (Raw Sewage) |
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Wet Weather |

***Table 6-7a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| Overflow Use Occurences | All Year | | Occurences/Month | MAvg Load | Continuous | Visual | Non Wet Weather |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | Weekly | Composite | Effluent |
| TRC | All Year | 0.02 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 45 | mg/L | DMax Conc | Weekly | Composite | Effluent |
| TSS | All Year | | mg/L | DMax Conc | Weekly | Composite | Influent (Raw Sewage) |
| TSS | All Year | 30 | lb/day | DMax Load | Weekly | Composite | Effluent |
| TSS | All Year | 40 | mg/L | MAvg Conc | Weekly | Composite | Effluent |
| TSS | All Year | 22.5 | lb/day | MAvg Load | Weekly | Composite | Effluent |
| TSS | All Year | | mg/L | MAvg Conc | Weekly | Composite | Influent (Raw Sewage) |
| TSS | All Year | 30 | mg/L | WAvg Conc | Weekly | Composite | Effluent |
| TSS % Removal | All Year | 40 | Percent | DMin % Removal | Weekly | Calculated | % Removal |
| TSS % Removal | All Year | 85 | Percent | MAvg % Removal | Weekly | Calculated | % Removal |
| pH | All Year | 9 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-7b.***

***Table 6-7a-b. Permit Limits for Friendship Sewage Treatment Plant.***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 10 Ammonia
- 2 CBOD
- 3 Chlorine
- 3 Settleable Solids.

***EFO Comments:***
No Issues.

## TN0026191 JEA- Medina Hydraulic Lagoon

**Discharger rating:** Minor
**City:** Medina
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** 10/31/04
**Expiration Date:** 10/31/07
**Receiving Stream(s):** Turkey Creek at mile 5.3
**HUC-12:** 080102040105
**Effluent Summary:** Treated municipal wastewater from Outfall 001
**Treatment system:** Lagoon system

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| BOD5 | All Year | 45 | mg/L | DMax Conc | Weekly | Grab | Effluent |
| BOD5 | All Year | 45 | mg/L | MAvg Conc | Weekly | Grab | Effluent |
| CBOD % Removal | All Year | 65 | Percent | MAvg % Removal | Weekly | Calculated | Percent Removal |
| D.O. | All Year | 1 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | Weekdays | Grab | Effluent |
| TRC | All Year | 2 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 100 | mg/L | DMax Conc | Weekly | Grab | Effluent |
| TSS | All Year | 100 | mg/L | MAvg Conc | Weekly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Weekdays | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-8. Permit Limits for JEA- Medina Hydraulic Lagoon.***

### *Compliance History:*
None noted.

### *EFO Comments:*
Jackson Energy Authority purchased this facility.

## TN0021750 Trenton Lagoon

**Discharger rating:** Minor
**City:** Trenton
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** 2/28/02
**Expiration Date:** 2/28/07
**Receiving Stream(s):** North Fork Forked Deer River Mile 35.9
**HUC-12:** 080102040302
**Effluent Summary:** Treated domestic wastewater from Outfall 001
**Treatment system:** Lagoon system

| | |
|---|---|
| **Segment** | TN08010204020_1000 |
| **Name** | North Fork Forked Deer |
| **Size** | 10.9 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 2004 |
| **Designated Uses** | Recreation (Supporting), Irrigation (Supporting), Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Physical substrate habitat alterations, Sedimentation/Siltation |
| **Sources** | Channelization, Non-irrigated Crop Production |

***Table 6-9. Stream Segment Information for Trenton Lagoon.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | Summer | 10 | mg/L | DMax Conc | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Summer | 63 | lb/day | DMax Load | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Summer | 5 | mg/L | WAvg Conc | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Summer | 47 | lb/day | DMax Load | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Summer | 31 | lb/day | MAvg Load | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Summer | 7.5 | mg/L | MAvg Conc | Bi-monthly | Grab | Effluent |
| Ammonia as N (Total) | Winter | 20 | mg/L | DMax Conc | 2/Month | Grab | Effluent |
| Ammonia as N (Total) | Winter | 63 | lb/day | MAvg Load | 2/Month | Grab | Effluent |
| Ammonia as N (Total) | Winter | 15 | mg/L | MAvg Conc | 2/Month | Grab | Effluent |
| Ammonia as N (Total) | Winter | 125 | lb/day | DMax Load | 2/Month | Grab | Effluent |
| Ammonia as N (Total) | Winter | 94 | lb/day | DMax Load | 2/Month | Grab | Effluent |
| Ammonia as N (Total) | Winter | 10 | mg/L | WAvg Conc | 2/Month | Grab | Effluent |
| CBOD % Removal | All Year | 65 | Percent | MAvg % Removal | Weekly | Calculated | % Removal |
| CBOD5 | All Year | 40 | mg/L | DMax Conc | Weekly | Grab | Effluent |
| CBOD5 | All Year | 250 | lb/day | DMax Load | Weekly | Grab | Effluent |
| CBOD5 | All Year | 219 | lb/day | DMax Load | Weekly | Grab | Effluent |
| CBOD5 | All Year | 25 | mg/L | DMin Conc | Weekly | Grab | Effluent |
| CBOD5 | All Year | 156 | lb/day | MAvg Load | Weekly | Grab | Effluent |
| CBOD5 | All Year | 35 | mg/L | MAvg Conc | Weekly | Grab | Effluent |
| D.O. | All Year | 5 | mg/L | DMin Conc | Weekdays | Grab | Effluent |

***Table 6-10a.***

| PARAMETER | SEASON | LIMIT | UNITS | SAMPLE DESIGNATOR | MONITORING FREQUENCY | SAMPLE TYPE | MONITORING LOCATION |
|---|---|---|---|---|---|---|---|
| E. coli | All Year | 126 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Weekly | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Weekly | Grab | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.14 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 120 | mg/L | DMax Conc | Weekly | Grab | Effluent |
| TSS | All Year | 751 | lb/day | DMax Load | Weekly | Grab | Effluent |
| TSS | All Year | 688 | lb/day | DMax Load | Weekly | Grab | Effluent |
| TSS | All Year | 110 | mg/L | MAvg Conc | Weekly | Grab | Effluent |
| TSS | All Year | 626 | lb/day | MAvg Load | Weekly | Grab | Effluent |
| TSS | All Year | 100 | mg/L | WAvg Conc | Weekly | Grab | Effluent |
| pH | All Year | 10 | SU | DMax Conc | 2/Week | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | 2/Week | Grab | Effluent |

***Table 6-10b.***

***Tables 6-10a-b. Permit Limits for Trenton Lagoon.***

### *Compliance History:*

- 24 overflows

### *EFO Comments:*

No Issues.

## TN0078271 Trenton Waste Water Lagoon

**Discharger rating:** Minor
**City:** Trenton
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** None Yet
**Expiration Date:** None Yet
**Receiving Stream(s):** North Fork Forked Deer River (at confluence of Cain Creek to the North Fork Forked Deer River)
**HUC-12:** 080102040302
**Effluent Summary:** Treated domestic wastewater from Outfall 001
**Treatment system:** Two cell, aerated lagoon

| | |
|---|---|
| **Segment** | TN08010204020_1000 |
| **Name** | North Fork Forked Deer |
| **Size** | 10.9 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 2004 |
| **Designated Uses** | Recreation (Supporting), Irrigation (Supporting), Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Physical substrate habitat alterations, Sedimentation/Siltation |
| **Sources** | Channelization, Non-irrigated Crop Production |

***6-11. Stream Segment Information for Trenton Waste Water Lagoon.***

***Permit Limits:***
None Yet

***EFO Comments:***
New facility to replace TN0021750.

## TN0055247 Westover Elementary School

**Discharger rating:** Minor
**City:** Trenton
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** 6/28/02
**Expiration Date:** 6/30/07
**Receiving Stream(s):** Unnamed ditch at mile 1.1 to Middle Fork Forked Deer River at mile 54.6
**HUC-12:** 080102040102
**Effluent Summary:** Treated domestic wastewater from Outfall 001
**Treatment system:** Lagoon system

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | All Year | 10 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Ammonia as N (Total) | All Year | 5 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| CBOD5 | All Year | 20 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| CBOD5 | All Year | 10 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Weekdays | Grab | Effluent |
| Fecal Coliform | All Year | 1000 | #/100mL | DMax Conc | Monthly | Grab | Effluent |
| Fecal Coliform | All Year | 200 | #/100mL | MAvg Geo Mean | Monthly | Grab | Effluent |
| Settleable Solids | All Year | 1 | mL/L | DMax Conc | 2/Week | Grab | Effluent |
| TRC | All Year | 1 | mg/L | DMax Conc | Weekdays | Grab | Effluent |
| TSS | All Year | 45 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 30 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| pH | All Year | 8.5 | SU | DMax Conc | 2/Week | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | 2/Week | Grab | Effluent |

***Tables 6-11. Permit Limits for Westover Elementary School.***

### *EFO Comments:*

New Superintendent may help resolve some of the school's wastewater issues.

## 6.4.B. Industrial Permits

### TN0074811 Ameristeel - West Tennessee Steel Mill Division

**Discharger rating:** Minor
**City:** Jackson
**County:** Madison
**EFO Name:** Jackson
**Issuance Date:** 5/30/03
**Expiration Date:** 12/31/07
**Receiving Stream(s):** Mile 1.5 of Dyer Creek to Middle Fork Forked Deer River at mile 31.5 (001), and mile 1.0 of an unnamed tributary to Middle Fork Forked Deer River at mile 32.5 (002)
**HUC-12:** 080102040104
**Effluent Summary:** Cooling water (Outfalls 001 and 002)
**Treatment system:** -

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Fe (T) | All Year | 2 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Fe (T) | All Year | 1 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Monthly | Instantaneous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Monthly | Instantaneous | Effluent |
| IC25 7day Ceriodaphnia Dubia | All Year | 100 | Percent | DMin Conc | Semi-annually | Composite | Effluent |
| IC25 7day Fathead Minnows | All Year | 100 | Percent | DMin Conc | Semi-annually | Composite | Effluent |
| Oil and Grease (Freon EM) | All Year | 15 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Oil and Grease (Freon EM) | All Year | 10 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.019 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.011 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Temperature (°C) | All Year | | Deg. C | DMax Conc | Monthly | Grab | Effluent |
| Temperature (°C) | All Year | | Deg. C | MAvg Conc | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Monthly | Grab | Effluent |

***Tables 6-12. Permit Limits for Ameristeel - West Tennessee Steel Mill Division.***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 12 Iron
- 5 TSS
- 19 pH

***EFO Comments:***
Steel Works, Blast Furnaces (Including Coke Ovens), and Rolling Mills. Expanded operations for scrap recovery. It is the largest railcar dismantling facility east of the Mississippi.

## TN0064017 Dr. Pepper Pepsi-Cola Bottling Co

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 8/31/04
**Expiration Date:** 9/29/07
**Receiving Stream(s):** Unnamed tributary at mile 0.6 to another unnamed tributary at mile 0.4 to Pond Creek at mile 1.2
**HUC-12:** 080102040403
**Effluent Summary:** Bottle rinse water through Outfall 001
**Treatment system:** No treatment of process wastewater. The facility uses city water to rinse new, unused beverage containers.

| | |
|---|---|
| **Segment** | TN08010204003_1000 |
| **Name** | Pond Creek |
| **Size** | 24.7 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 2004 |
| **Designated Uses** | Recreation (Non-Supporting), Irrigation (Supporting), Fish and Aquatic Life (Non-Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Escherichia coli, Sedimentation/Siltation, Physical substrate habitat alterations, Oxygen, Dissolved, Phosphate |
| **Sources** | Non-irrigated Crop Production, Channelization, Source Unknown |

***Table 6-13. Stream Segment Information for Dr. Pepper Pepsi-Cola Bottling Co.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Flow | All Year | | MGD | DMax Load | Weekly | Instantaneous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Weekly | Instantaneous | Effluent |
| TRC | All Year | 0.019 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.011 | mg/L | MAvg Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Weekly | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Weekly | Grab | Effluent |

***Table 6-14. Permit Limits for Dr. Pepper Pepsi-Cola Bottling Co.***

***Compliance History:***
No numbers of exceedences noted in PCS.

***EFO Comments:***
Bottled and Canned Soft Drinks and Carbonated Waters. No Issues.

## TN0077739 Excalibar Minerals, Inc.

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 5/10/04
**Expiration Date:** 4/30/07
**Receiving Stream(s):** Unnamed tributary of Lewis Creek
**HUC-12:** 080102040404
**Effluent Summary:** Industrial storm water runoff from Outfalls SW1, SW2 and SW3
**Treatment system:** Vegetative buffer zones, settling.

| | |
|---|---|
| **Segment** | TN08010204023_1000 |
| **Name** | Lewis Creek |
| **Size** | 46.3 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 1990 |
| **Designated Uses** | Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Physical substrate habitat alterations, Sedimentation/Siltation, Escherichia coli |
| **Sources** | Channelization, Discharges from Municipal Separate Storm Sewer Systems (MS4), Non-irrigated Crop Production |

***Table 6-15. Stream Segment Information for Excalibar Minerals, Inc.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Floating Solids Or Visible Foam-Visual | All Year | | YES=1 NO=0 | DMax Conc | Monthly | Visual | Effluent |
| Flow | All Year | | MGD | DMax Load | Monthly | Estimate | Effluent |
| Flow | All Year | | MGD | MAvg Load | Monthly | Estimate | Effluent |
| Oil and Grease (Freon EM) | All Year | 15 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-16. Permit Limits for Excalibar Minerals, Inc.***

### *Compliance History:*
No numbers of exceedences noted in PCS.

### *EFO Comments:*
Crushing, grinding and processing Barite ($BaSO_4$) and Limestone ($CaCO_3$). No process wastewater. Storm water only. Manager is interested in some relief from monthly testing. I said that if he had a good history of meeting his permit limits, it may be worthwhile to ask for quarterly analytical limits and monthly visual observations

## TN0000221 Excel Polymers

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 5/31/02
**Expiration Date:** 4/30/07
**Receiving Stream(s):** Unnamed tributary to the North Fork Forked Deer River at mile 6.2
**HUC-12:** 080102040402
**Effluent Summary:** Industrial storm water runoff through Outfall SW3
**Treatment system:** Storm water pollution prevention plan measures

| | |
|---|---|
| **Segment** | TN08010204004_1000 |
| **Name** | North Fork Forked Deer River |
| **Size** | 20.6 |
| **Unit** | Miles |
| **First Year on 303(d) List** | - |
| **Designated Uses** | Fish and Aquatic Life (Supporting), Recreation (Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | N/A |
| **Sources** | N/A |

***Table 6-17. Stream Segment Information for Excel Polymers.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| BOD5 | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| COD | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Quarterly | Instantaneous | Effluent |
| Oil and Grease (Freon EM) | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| TSS | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| Zn (T) | All Year | | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| pH | All Year | | SU | DMax Conc | Quarterly | Grab | Effluent |

***Table 6-18. Permit Limits for Excel Polymers.***

***Compliance History:***
No numbers of exceedences noted in PCS.

***Comments:***
Fabricated Rubber Products, NEC. No Issues.

## TN0000027 Heckethorn Manufacturing Company, Inc.

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 3/28/02
**Expiration Date:** 3/28/07
**Receiving Stream(s):** Mile 0.3 of an unnamed tributary to mile 1.3 of the Old Channel North Fork Forked Deer to mile 2.1 of the North Fork Forked Deer River
**HUC-12:** 080102040402
**Effluent Summary:** Non-contact cooling water from Outfall 001
**Treatment system:** Non-contact cooling water purchased from the City of Dyersburg

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Oil and Grease (Freon EM) | All Year | 15 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.019 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-19. Permit Limits for Heckethorn Manufacturing Company, Inc.***

***Compliance History:***
No numbers of exceedences noted in PCS.

***Comments:***
Metal forming business producing muffler clamps and hanger rods for the auto industry.

## TN0068497 Maytag, Jackson Dishwashing Products

**Discharger rating:** Minor
**City:** Jackson
**County:** Madison
**EFO Name:** Jackson
**Issuance Date:** 3/31/06
**Expiration Date:** 3/30/07
**Receiving Stream(s):** Unnamed tributary at mile 4.2 to Dyer Creek at mile 3.0 to the Middle Fork Forked Deer River at mile 31.2
**HUC-12:** 080102040104
**Effluent Summary:** Non-contact cooling water from Outfall 001
**Treatment system:** -

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Ammonia as N (Total) | All Year | 2 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| BOD5 | All Year | 12 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| D.O. | All Year | 6 | mg/L | DMin Conc | Monthly | Grab | Effluent |
| Flow | All Year | | MGD | MAvg Conc | Monthly | Instantaneous | Effluent |
| Flow | All Year | | MGD | DMax Conc | Monthly | Instantaneous | Effluent |
| Oil and Grease (Hexane Extraction) | All Year | 15 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 1 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | | mg/L | DMax Conc | | | Effluent |
| Temperature (°C) | All Year | | °C | MAvg Geo Mean | See Permit | Grab | Effluent |
| Zn (T) | All Year | 0.221 | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-20. Permit Limits for Maytag, Jackson Dishwashing Products***

### *Compliance History:*
No numbers of exceedences noted in PCS.

### *EFO Comments:*
Manufacturing household appliances. Industry was recently sold but no changes in production have occurred.

## TN0072966 Trunkline Gas Company- Dyersburg Compressor Station

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 12/31/02
**Expiration Date:** 12/31/07
**Receiving Stream(s):** Unnamed tributary at mile 1.4 to Nash Creek at mile 3.0
**HUC-12:** 080102040401
**Effluent Summary:** Non-contact cooling water from Outfall 001
**Treatment system:** -

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Oil and Grease (Freon EM) | All Year | 15 | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| Polychlorinated Biphenyls (PCBs) | All Year | 2E-04 | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Quarterly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Quarterly | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Quarterly | Grab | Effluent |

***Table 6-21. Permit Limits for Trunkline Gas Company- Dyersburg Compressor Station.***

### *Compliance History:*
No numbers of exceedences noted in PCS.

### *EFO Comments:*
Natural Gas Transmission. No Issues.

## TN0000272 Wisconsin Box Company

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Gibson
**EFO Name:** Jackson
**Issuance Date:** 9/30/02
**Expiration Date:** 9/30/07
**Receiving Stream(s):** Wet weather conveyance to Sand Creek at mile 1.8
**HUC-12:** 080102040304
**Effluent Summary:** Note! Only boiler blow down and well water overflow are still discharged from Outfall 001. Their cooling water and seasonal log sprinkler water have been eliminated.
**Treatment system:** None

| | |
|---|---|
| **Segment** | TN08010204021_0100 |
| **Name** | Dry Creek |
| **Size** | 5.73 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 2004 |
| **Designated Uses** | Fish and Aquatic Life (Non-Supporting), Recreation (Not Assessed), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Physical substrate habitat alterations |
| **Sources** | Channelization |

***Table 6-22. Stream Segment Information for Wisconsin Box Company.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| BOD5 | All Year | 25 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Debris Floating (Severity) | All Year | | PASS=0 FAIL=1 | DMax Conc | Monthly | Grab | Effluent |
| Fe (T) | All Year | 1.9 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Monthly | Instantaneous | Effluent |
| Flow | All Year | | MGD | MAvg Load | Monthly | Instantaneous | Effluent |
| IC25 7day Ceriodaphnia Dubia | All Year | 100 | Percent | DMin Conc | Annually | Composite | Effluent |
| Oil and Grease (Freon EM) | All Year | 30 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Temperature (°C) | All Year | 30.5 | Deg. C | DMax Conc | Monthly | Grab | Effluent |
| Temperature Diff. Downstrm & Upstrm (°C) | All Year | | Deg. C | DMax Conc | Monthly | Grab | Effluent |
| Temperature Rate of Change (°C/Hr) | All Year | | Deg. C/Hour | DMax Load | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-23. Permit Limits for Wisconsin Box Company.***

***Compliance History:***
No numbers of exceedences noted in PCS.

***EFO Comments:***
Wood Containers. No more Wet Storage and no more discharge, should be able to terminate permit this year.

## 6.4.B. Water Treatment Plant Permits

### TN0060828 Dyersburg Suburban Consolidated U.D. Water Treatment Plant

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 9/29/04
**Expiration Date:** 9/29/09
**Receiving Stream(s):** Unnamed tributary at mile 1.0 to the North Fork Forked Deer River at mile 5.4
**HUC-12:** 080102040402
**Effluent Summary:** Filter backwash and/or sedimentation basin washdown from Outfall 001
**Treatment system:** Lime, chlorine, aqua mag, and fluorosilicic acid

| | |
|---|---|
| **Segment** | TN08010204001_1000 |
| **Name** | North Fork Forked Deer River |
| **Size** | 8.34 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 1990 |
| **Designated Uses** | Irrigation (Supporting), Livestock Watering and Wildlife (Supporting), Recreation (Non-Supporting), Fish and Aquatic Life (Non-Supporting) |
| **Causes** | Escherichia coli, Phosphate, Sedimentation/Siltation |
| **Sources** | Non-irrigated Crop Production, Channelization, Discharges from Municipal Separate Storm Sewer Systems (MS4), Source Unknown |

***Table 6-24. Stream Segment Information for Dyersburg Suburban Consolidated U.D. WTP.***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Fe (T) | All Year | 2 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Monthly | Instantaneous | Effluent |
| Settleable Solids | All Year | 0.5 | mL/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.019 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-25. Permit Limits for Dyersburg Suburban Consolidated U.D. WTP.***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 4 Iron
- 3 Chlorine

***EFO Comments:***
Iron removal WTP

## TN0056243 Northwest Dyersburg Utility District Water Treatment Plant

**Discharger rating:** Minor
**City:** Dyersburg
**County:** Dyer
**EFO Name:** Jackson
**Issuance Date:** 9/29/04
**Expiration Date:** 9/27/09
**Receiving Stream(s):** Unnamed tributary of Lewis Creek
**HUC-12:** 080102060404
**Effluent Summary:** Filter backwash and/or sedimentation basin washdown from Outfall 001
**Treatment system:** Lime, chlorine and hydroflourosylicic acid

| | |
|---|---|
| **Segment** | TN08010204023_1000 |
| **Name** | Lewis Creek |
| **Size** | 46.3 |
| **Unit** | Miles |
| **First Year on 303(d) List** | 1990 |
| **Designated Uses** | Fish and Aquatic Life (Non-Supporting), Recreation (Non-Supporting), Irrigation (Supporting), Livestock Watering and Wildlife (Supporting) |
| **Causes** | Physical substrate habitat alterations, Sedimentation/Siltation, Escherichia coli |
| **Sources** | Channelization, Discharges from Municipal Separate Storm Sewer Systems (MS4), Non-irrigated Crop Production |

***Table 6-26. Stream Segment Information for Northwest Dyersburg Utility District WTP***

| *PARAMETER* | *SEASON* | *LIMIT* | *UNITS* | *SAMPLE DESIGNATOR* | *MONITORING FREQUENCY* | *SAMPLE TYPE* | *MONITORING LOCATION* |
|---|---|---|---|---|---|---|---|
| Fe (T) | All Year | 2 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| Flow | All Year | | MGD | DMax Load | Monthly | Instantaneous | Effluent |
| Settleable Solids | All Year | 0.5 | mL/L | DMax Conc | Monthly | Grab | Effluent |
| TRC | All Year | 0.019 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| TSS | All Year | 40 | mg/L | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 9 | SU | DMax Conc | Monthly | Grab | Effluent |
| pH | All Year | 6.5 | SU | DMin Conc | Monthly | Grab | Effluent |

***Table 6-27. Permit Limits for Northwest Dyersburg Utility District WTP***

***Compliance History:***
The following numbers of exceedences were noted in PCS:

- 1 Settleable Solids
- 1 Chlorine

***EFO Comments:***
Iron removal WTP

# APPENDIX II

| ID | NAME | HAZARD | | ID | NAME | HAZARD |
|---|---|---|---|---|---|---|
| 17003 | Commerce Park | 2 | | 277025 | New Enterprise 437-Ne-2 | 3 |
| 97008 | Moss Creek #1 (#87-4) | 2 | | 277028 | Hayes | 2 |
| 97010 | Moss Creek #2 (87-3) | 2 | | 277029 | Dry Creek Branch (445-Sw) | 3 |
| 97015 | Belue | L | | 277030 | N. Fork Forked Deer #2 | Q |
| 97024 | Ofdba #86-87-2 | N | | 277032 | N. Fork Forked Deer #4 | Q |
| 177001 | Humbolt Lake | 2 | | 397006 | Susan Branch #1 (87-7) | 2 |
| 177002 | Reasons | O | | 397008 | Spring Creek Trib #88-2 | 2 |
| 177003 | Cotton's Pond | 3 | | 397012 | Mt. Gilead #87-5 | 3 |
| 237001 | Pillow Lake | 3 | | 397014 | Susan Branch #2(445-Se-14) | 3 |
| 237005 | Lewis Creek #60-11 | 1 | | 397015 | Barker Branch #446-Ne-4 | 3 |
| 237006 | Pioneer #2a | O | | 397016 | Cane Creek | 3 |
| 237007 | Pioneer #3 | H | | 577012 | Springbrook | 3 |
| 237008 | Pioneer #4 | H | | 577013 | Sunset | 3 |
| 237009 | Pioneer #5 | H | | 577014 | Fern | 3 |
| 237010 | Roellen #61-71-3 | 3 | | 577016 | Williamson Camp Lake | 3 |
| 237011 | Rolling Acres | 3 | | 577017 | Lake Deforest | 2 |
| 237012 | Clark Farm Lake | 3 | | 577019 | Spring Creek #86-95-2 | 2 |
| 237013 | Jones | 3 | | 577021 | Rockwell Lake | 3 |
| 237016 | Kirk 'A' | 3 | | 577022 | Construction Products | H |
| 237017 | Kirk 'B' | 3 | | 577026 | Dyer Creek #438-Ne-3 | 3 |
| 237018 | Kirk #60-11-1 | 1 | | 577027 | Eubank Branch #445-Se-1 | 3 |
| 237019 | Kirk #60-11-1-A | 3 | | 577028 | Gilmer's Creek # 446-Nw-6 | 3 |
| 237024 | Lewis #2 | 1 | | 577029 | New Carmel #445-Sw-4 | 3 |
| 237025 | Lake Luanna | 1 | | 577037 | Ofdba #86-87-1 | N |
| 247003 | Hall | 3 | | 577038 | Hughes Creek #445 Sw10 | 2 |
| 277002 | Bowers | 3 | | 577039 | Eubank Branch #2 #445-Se-Sw-4 | 3 |
| 277003 | Jones Farm Pond | L | | 577040 | Beech Branch #438-Nw-1 | 3 |
| 277010 | New Hope #437-Nw-1 | 3 | | 577041 | Claybrook #446-Ne-8 | 2 |
| 277016 | Mt Olive #428-Se-1 | 3 | | | | |

***Table A2-1. Inventoried Dams in the North Fork Forked Deer Watershed.*** *Hazard Codes: F, Federal; High (H, 1); Significant, (S, 2); Low, (L, 3); Breached, (B); O, Too Small. TDEC only regulates dams indicated by a numeric hazard score.*

| LAND COVER/LAND USE | ACRES | % OF WATERSHED |
|---|---|---|
| Open Water | 7,275 | 1.2 |
| Other Grasses | 860 | 0.1 |
| Pasture/Hay | 181,517 | 29.6 |
| Row Crops | 257,559 | 42.0 |
| Woody Wetlands | 36,713 | 6.0 |
| Small Grains | 1,927 | 0.3 |
| Deciduous Forest | 76,767 | 12.5 |
| Mixed Forest | 25,223 | 4.1 |
| Evergreen Forest | 6,371 | 1.0 |
| High Intensity: Commercial/Industrial | 3,399 | 0.6 |
| High Intensity: Residential | 2,890 | 0.5 |
| Low Intensity: Residential | 11,510 | 1.9 |
| Quarries/Strip Mines/Gravel Pits | 122 | 0.0 |
| Transitional | 673 | 0.1 |
| Bare Rock/Sand/Clay | 75 | 0.0 |
| **Total** | **612,881** | **99.9** |

***Table A2-2. Land Use Distribution in North Fork Forked Deer 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) |
|---|---|---|---|
| | | | |
| Southeastern Plains and Hills (65e) | Blunt Creek<br>Griffin Creek<br>Harris Creek<br>Marshall Creek<br>West Fork Spring Creek | TN Western Valley (KY Lake)<br>North Fork Forked Deer<br>South Fork Forked Deer<br>Hatchie River<br>Hatchie River | 06040005<br>08010204<br>08010205<br>08010208<br>08010208 |
| | | | |
| Northern Mississippi Alluvial Plain (73a) | Cold Creek<br>Middle Fork, Forked Deer River<br>Cold Creek<br>Bayou du Chien | Mississippi River<br>Mississippi River<br>Mississippi River<br>Obion River | 08010100<br>08010100<br>08010100<br>08010202 |
| | | | |
| Bluff Hills (74a) | Sugar Creek<br>Paw Paw Creek | Mississippi River<br>Obion River | 08010100<br>08010202 |
| | | | |
| Loess Plains (74b) | Terrapin Creek<br>Powell Creek<br>Wolf River | Obion River<br>Obion River<br>Wolf River | 08010202<br>08010202<br>08010210 |

***Table A2-3. Ecoregion Monitoring Sites in Ecoregions 65e, 73a, 74a, and 74b.***

***.***

| CODE | NAME | AGENCY | AGENCY ID |
|---|---|---|---|
| 276 | TDOT SR 152 MITIGATION SITE | TDOT | |
| 363 | TDOT TRIB TO MFFD R MITIGATION/PERMIT SITE | TDOT | |
| 385 | TDOT SR-20 PERMIT SITE | TDOT | |
| 399 | TDOT MFFDR-15 PERMIT SITE | TDOT | |
| 474 | TDEC/WPC TRIB OF LEWIS CRK PERMIT/MITIGATION SITE | TDEC/WPC | |
| 857 | USFWS ALMOUS AUSTIN WRP SITE | USFWS | TRACT 9535, FARM 3267 |
| 858 | USFWS JAMES AUSTIN WRP SITE | USFWS | TRACT 9532, FARM 3264 |
| 859 | USFWS JAMES AUSTIN WRP SITE | USFWS | TRACT 2942, FARM 3264 |
| 860 | USFWS FRED WITTBEE WRP SITE | USFWS | TRACT 3001, FARM 1682 |
| 861 | USFWS MALCOLM BURCHFIELD WRP SITE | USFWS | TRACT 9248, FARM 2892 |
| 862 | USFWS MALCOLM BURCHFIELD WRP SITE | USFWS | TRACT 3074, FARM 2892 |
| 864 | USFWS MALCOLM BURCHFIELD WRP SITE | USFWS | TRACT 2911, FARM 2892 |
| 881 | USFWS WYLIE EVANS WRP SITE | USFWS | TRACT 225, FARM 625 |
| 893 | USFWS TOM BELL WRP SITE | USFWS | TRACT 2367, FARM 179 |
| 896 | USFWS M.J. MYHR WRP SITE | USFWS | TRACT 1101, FARM 1661 |
| 898 | USFWS GERALD TRAVIS WOODS WRP SITE | USFWS | TRACT 351, FARM 1570 |
| 909 | USFWS ROLAND MORRIS WRP SITE | USFWS | TRACT 9309, FARM 2971 |
| 910 | USFWS J.W. DAVIS WRP SITE | USFWS | TRACT 1582, FARM 3157 |
| 914 | USFWS ROLAND MORRIS WRP SITE | USFWS | TRACT 2865, FARM 3287 |
| 915 | USFWS ROLAND MORRIS WRP SITE | USFWS | TRACT 2916, FARM 3287 |
| 916 | USFWS ROBERT BELL WRP SITE | USFWS | TRACT 2335, FARM 71 |
| 917 | USFWS ROBERT S. BELL WRP SITE | USFWS | TRACT 2336, FARM 2488 |
| 918 | USFWS ROLAND MORRIS WRP SITE | USFWS | TRACT 2863, FARM 3287 |
| 1213 | TWRA TIGRETT SITE | TWRA | |
| 1214 | TWRA TIGRETT REFUGE SITE | TWRA | |
| 1216 | TWRA TIGRETT SITE | TWRA | |
| 1217 | TWRA TIGRETT REFUGE SITE | TWRA | |
| 1218 | TWRA TIGRETT SITE | TWRA | |
| 1219 | TWRA TIGRETT SITE | TWRA | |
| 1220 | TWRA TIGRETT SITE | TWRA | |
| 1233 | TWRA SITE | TWRA | |
| 1243 | TWRS TIGRETT SITE | TWRA | |
| 1252 | TWRA SITE | TWRA | |
| 1254 | TWRA SITE | TWRA | |
| 1280 | USACOE FORKED DEER R 95-003 [TS] SITE | USACOE-M | |
| 1331 | USACOE M. FORK FORKED DEER R 95-001 [TS] SITE | USACOE-M | |
| 1332 | USACOE M. FORK FORKED DEER R 95-003 [TF] SITE | USACOE-M | |
| 1333 | USACOE M. FORK FORKED DEER R 95-012 [TF] SITE | USACOE-M | |
| 1334 | USACOE M. FORK FORKED DEER R 95-014 [TD] SITE | USACOE-M | |
| 1345 | USACOE MOIZE CREEK SITE | USACOE-M | |
| 1372 | USACOE NORTH FORK FORKED DEER R-32-TD SITE | USACOE-M | |
| 1373 | USACOE NORTH FORK FORKED DEER R-34 [TF] SITE | USACOE-M | |
| 1375 | USACOE N. FORK FORKED DEER R 95-010 [TF] SITE | USACOE-M | |
| 1376 | USACOE N. FORK FORKED DEER R 96-004 [TD] SITE | USACOE-M | |
| 1403 | USACOE SUGAR CREEK SITE | USACOE-M | |
| 1486 | USACOE MIDDLE FORK FORKED DEER R-1 SITE | USACOE-M | |
| 1488 | USACOE MIDDLE FORK FORKED DEER R-2A SITE | USACOE-M | |
| 1489 | USACOE MIDDLE FORK FORKED DER R-3 SITE | USACOE-M | |
| 1490 | USACOE MIDDLE FORK FORKED DEER R-6 SITE | USACOE-M | |
| 1491 | USACOE MIDDLE FORK FORKED DEER R-7 SITE | USACOE-M | |

| | | | |
|---|---|---|---|
| 1492 | USACOE MIDDLE FORK FORKED DEER R-8 SITE | USACOE-M | |
| 1533 | USACOE M. FORK FORKED DEER R-13 & 13A SITE | USACOE-M | |
| 1534 | USACOE MIDDLE FORK FORKED DEER R-15 SITE | USACOE-M | |
| 1535 | USACOE MIDDLE FORK FORKED DEER R-21 SITE | USACOE-M | |
| 1536 | USACOE NORTH FORK FORKED DEER R-18 SITE | USACOE-M | |
| 1537 | USACOE NORTH FORK FORKED DEER R-20 SITE | USACOE-M | |
| 1538 | USACOE NORTH FORK FORKED DEER R-21 SITE | USACOE-M | |
| 1539 | USACOE NORTH FORK FORKED DEER R-22 SITE | USACOE-M | |
| 1540 | USACOE NORTH FORK FORKED DEER R-24 SITE | USACOE-M | |
| 1541 | USACOE NORTH FORK FORKED DEER R-26 SITE | USACOE-M | |
| 1542 | USACOE NORTH FORK FORKED DEER RIVER: POND CREEK-27 | USACOE-M | |
| 1543 | USACOE NORTH FORK FORKED DEER RIVER-27 SITE | USACOE-M | |
| 1544 | USACOE NORTH FORK FORKED DEER RIVER-28 SITE | USACOE-M | |
| 1545 | USACOE NORTH FORK FORKED DEER RIVER-30 SITE | USACOE-M | |
| 1546 | USACOE NORTH FORK FORKED DEER RIVER-29 SITE | USACOE-M | |
| 1547 | USACOE NORTH FORK FORKED DEER RIVER-31 SITE | USACOE-M | |
| 1548 | USACOE NORTH FORK FORKED DEER RIVER-35 SITE | USACOE-M | |
| 1549 | USACOE NORTH FORK FORKED DEER RIVER/MUD CREEK-1 | USACOE-M | |
| 1550 | USACOE STOKES CREEK-1 SITE | USACOE-M | |
| 1551 | USACOE NORTH FORK FORKED DEER R-14 SITE | USACOE-M | |
| 1552 | USACOE NORTH FORK FORKED DEER R-16 SITE | USACOE-M | |
| 1553 | USACOE NORTH FORK FORKED DEER R-17 SITE | USACOE-M | |
| 1554 | USACOE OBION-FORKED DEER BASIN AUTHORITY-1B SITE | USACOE-M | |
| 1555 | USACOE NORTH FORK FORKED DEER R-9 SITE | USACOE-M | |
| 1556 | USACOE NORTH FORK FORKED DEER R-3 SITE | USACOE-M | |
| 1557 | USACOE NORTH FORK FORKED DEER R-4 SITE | USACOE-M | |
| 1558 | USACOE NORTH FORK FORKED DEER R-5 SITE | USACOE-M | |
| 1559 | USACOE NORTH FORK FORKED DEER R-6 SITE | USACOE-M | |
| 1560 | USACOE NORTH FORK FORKED DEER R-7 SITE | USACOE-M | |
| 1561 | USACOE NORTH FORK FORKED DEER R-2 SITE | USACOE-M | |
| 1563 | USACOE NORTH FORK FORKED DEER R-10 SITE | USACOE-M | |
| 1564 | USACOE NORTH FORK FORKED DEER R-11 SITE | USACOE-M | |
| 1565 | USACOE NORTH FORK FORKED DEER R-12 SITE | USACOE-M | |
| 1566 | USACOE NORTH FORK FORKED DEER R-13 SITE | USACOE-M | |
| 1650 | USACOE MIDDLE FORK FORKED DEER R-17 SITE | USACOE-M | |
| 1651 | USACOE MIDDLE FORK FORKED DEER R-17 SITE | USACOE-M | |
| 1770 | USACOE POND CREEK-2 SITE | USACOE-M | |
| 1771 | USACOE BETHEL BRANCH-1 SITE | USACOE-M | |
| 1772 | USACOE DOAKVILLE CREEK-1 SITE | USACOE-M | |
| 1773 | USACOE NORTH FORK FORKED DEER R-MUD CREEK-2 | USACOE-M | |
| 1774 | USACOE LEWIS CREEK-1 SITE | USACOE-M | |
| 1775 | USACOE NORTH FORK FORKED DEER: POND CREEK-3-TD SITE | USACOE-M | |
| 1811 | TWRA FORKED DEER R CORPORATION SITE | TWRA | |
| 1820 | NRCS SITE | NRCS | |
| 1823 | NRCS SITE | NRCS | |
| 1824 | NRCS SITE | NRCS | |
| 1825 | NRCS SITE | NRCS | |
| 1826 | NRCS SITE | NRCS | |
| 1849 | NRCS SITE | NRCS | |
| 1852 | NRCS SITE | NRCS | |

| | | | |
|---|---|---|---|
| 1853 | NRCS SITE | NRCS | |
| 1884 | TWRA SPRING CREEK SITE | TWRA | |
| 1885 | TWRA SPRING CREEK SITE | TWRA | |
| 1897 | TWRA HORNS BLUFF SITE | TWRA | |
| 1898 | TWRA HORNS BLUFF REFUGE SITE | TWRA | |
| 1899 | TWRA HORNS BLUFF SITE | TWRA | |
| 1900 | TWRA HORNS BLUFF SITE | TWRA | |
| 1901 | TWRA HORNS BLUFF REFUGE SITE | TWRA | |
| 1902 | TWRA HORNS BLUFF REFUGE SITE | TWRA | |
| 1903 | TWRA HORNS BLUFF SITE | TWRA | |
| 1904 | TWRA HORNS BLUFF SITE | TWRA | |
| 1905 | TWRA HORNS BLUFF SITE | TWRA | |
| 1928 | TWRA HORNS BLUFF SITE | TWRA | |
| 1942 | TWRA TIGRETT SITE | TWRA | |
| 1944 | TWRA TIGRETT SITE | TWRA | |
| 1945 | TWRA TIGRETT SITE | TWRA | |
| 1946 | TWRA TIGRETT SITE | TWRA | |
| 1947 | TWRA TIGRETT SITE | TWRA | |
| 1948 | TWRA TIGRETT SITE | TWRA | |
| 1949 | TWRA TIGRETT SITE | TWRA | |
| 1951 | TWRA TIGRETT SITE | TWRA | |
| 1960 | TWRA TIGRETT SITE | TWRA | |
| 1961 | TWRA TIGRETT SITE | TWRA | |
| 2013 | TWRA TIGRETT MITIGATION SITE | TWRA | |
| 2014 | TWRA TIGRETT/TIGRETT ORIGINAL SITE | TWRA | |
| 2015 | TWRA TIGRETT/TIGRETT ORIGINAL SITE | TWRA | |
| 2016 | TWRA TIGRETT/TIGRETT WMA-ORIGINAL SITE | TWRA | |
| 2017 | TWRA TIGRETT MITIGATION SITE | TWRA | |
| 2018 | TWRA TIGRETT MITIGATION SITE | TWRA | |
| 2019 | TWRA TIGRETT MITIGATION SITE | TWRA | |
| 2020 | TWRA TIGRETT REFUGE SITE | TWRA | |
| 2021 | TWRA TIGRETT MITIGATION SITE | TWRA | |
| 2064 | TWRA HORNS BLUFF SITE | TWRA | |
| 2065 | TWRA HORNS BLUFF SITE | TWRA | |
| 2066 | TWRA HORNS BLUFF SITE | TWRA | |
| 2067 | TWRA HORNS BLUFF SITE | TWRA | |
| 2068 | TWRA HORNS BLUFF SITE | TWRA | |
| 2118 | TWRA TIGRETT SITE | TWRA | |
| 2129 | TWRA HORNS BLUFF SITE | TWRA | |
| 2235 | TWRA EATON BOTTOM SITE | TWRA | |
| 2236 | TWRA EATON BOTTOM SITE | TWRA | |
| 2237 | TWRA MITIGATION SITE | TWRA | |
| 2238 | TWRA EATON BOTTOM SITE | TWRA | |
| 2239 | TWRA MITIGATION SITE | TWRA | |
| 2240 | TWRA EATON BOTTOM SITE | TWRA | |
| 2307 | TWRA HORNS BLUFF SITE | TWRA | |
| 2308 | TWRA HORNS BLUFF SITE | TWRA | |
| 2309 | TWRA HORNS BLUFF SITE | TWRA | |
| 2310 | TWRA HORNS BLUFF SITE | TWRA | |
| 2311 | TWRA HORNS BLUFF SITE | TWRA | |
| 2312 | TWRA HORNS BLUFF SITE | TWRA | |
| 2313 | TWRA HORNS BLUFF SITE | TWRA | |

| | | | |
|---|---|---|---|
| 2314 | TWRA HORNS BLUFF SITE | TWRA | |
| 2315 | TWRA HORNS BLUFF SITE | TWRA | |
| 2316 | TWRA HORNS BLUFF SITE | TWRA | |
| 2317 | TWRA HORNS BLUFF SITE | TWRA | |
| 2318 | TWRA HORNS BLUFF SITE | TWRA | |
| 2319 | TWRA HORNS BLUFF SITE | TWRA | |
| 2320 | TWRA HORNS BLUFF SITE | TWRA | |
| 2321 | TWRA HORNS BLUFF SITE | TWRA | |
| 2323 | TWRA HORNS BLUFF SITE | TWRA | |
| 2324 | TWRA HORNS BLUFF SITE | TWRA | |
| 2331 | TWRA HORNS BLUFF SITE | TWRA | |
| 2332 | TWRA HORNS BLUFF SITE | TWRA | |
| 2333 | TWRA HORNS BLUFF SITE | TWRA | |
| 2563 | TWRA TIGRETT SITE | TWRA | |
| 2564 | TWRA TIGRETT REFUGE SITE | TWRA | |
| 2565 | TWRA TIGRETT SITE | TWRA | |
| 2566 | TWRA TIGRETT SITE | TWRA | |
| 2567 | TWRA TIGRETT SITE | TWRA | |
| 2568 | TWRA TIGRETT SITE | TWRA | |
| 2569 | TWRA TIGRETT SITE | TWRA | |
| 2570 | TWRA TIGRETT SITE | TWRA | |
| 2571 | TWRA TIGRETT SITE | TWRA | |
| 2572 | TWRA SITE | TWRA | |
| 2573 | TWRA TIGRETT SITE | TWRA | |
| 2675 | NRCS SITE | NRCS | |
| 2676 | NRCS SITE | NRCS | |
| 2687 | NRCS SITE | NRCS | |
| 2689 | NRCS SITE | NRCS | |
| 2791 | USACOE SOUTH FORK FORKED DEER 97-058 [TD] SITE | USACOE-M | 970410580 |

***Table A2-4. Wetland Sites in North Fork Forked Deer Watershed in TDEC Database.*** *TDEC, Tennessee Department of Environment and Conservation; USACOE, United States Army Corps of Engineers-Memphis District; WPC, Water Pollution Control; TDOT, Tennessee Department of Transportation' USFWS, United States Fish and Wildlife Service; TWRA, Tennessee Wildlife Resources Agency; DNH, Division of Natural Heritage, NRCS, Natural Resources Conservation Service.* ***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) |
|---|---|---|
| Cane Creek | TN08010204014_0300 | 17.8 |
| Griffin Creek | TN08010204014_0200 | 24.7 |
| Gurley Creek | TN08010204014_0500 | 15.6 |
| Middle Fork Forked Deer | TN08010204010_2000 | 8.5 |
| Middle Fork Forked Deer | TN08010204014_1000 | 23.2 |
| Middle Fork Forked Deer River | TN08010204010_3000 | 11.3 |
| Mud Creek | TN08010204021_1000 | 41.7 |
| North Fork Forked Deer | TN08010204020_1000 | 10.9 |
| North Fork Forked Deer River | TN08010204004_1000 | 20.6 |
| Spring Creek | TN08010204014_0600 | 14.4 |

***Table A3-1a. Streams Fully Supporting Designated Uses in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment*

| SEGMENT NAME | WATERBODY SEGMENT ID | SEGMENT SIZE (MILES) |
|---|---|---|
| Beech Creek | TN08010204010_1100 | 23.8 |
| Bethel Branch | TN08010204022_0200 | 30.4 |
| Cypress Creek | TN08010204009_1000 | 13.0 |
| Davis Creek | TN08010204017_0100 | 32.6 |
| Doakville Creek | TN08010204022_1000 | 36.0 |
| Dyer Creek | TN08010204010_0600 | 30.6 |
| Gilme's Creek | TN08010204013_1000 | 15.3 |
| Jones Creek | TN08010204023_0200 | 50.6 |
| Lewis Creek | TN08010204023_1000 | 46.3 |
| Middle Fork Forked Deer | TN08010204007_1000 | 15.3 |
| Middle Fork Forked Deer River | TN08010204010_1000 | 9.5 |
| Moize Creek | TN08010204010_0700 | 12.8 |
| North Fork Forked Deer | TN08010204020_2000 | 8.2 |
| North Fork Forked Deer River | TN08010204001_1000 | 15.5 |
| Poplar Creek | TN08010204010_0400 | 9.7 |
| Reagan Creek | TN08010204017_0110 | 13.3 |
| Stokes Creek | TN08010204005_1000 | 31.0 |
| Sugar Creek | TN08010204016_1000 | 26.5 |

***Table A3-1b. Streams Partially Supporting Designated Uses in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SEGMENT SIZE (MILES) |
|---|---|---|
| Buck Creek | TN08010204017_1000 | 39.8 |
| Dry Creek | TN08010204014_0100 | 9.0 |
| Johnson Creek | TN08010204010_0500 | 11.0 |
| Pond Creek | TN08010204003_1000 | 24.7 |
| Turkey Creek | TN08010204015_1000 | 24.3 |

***Table A3-1c. Streams Not Supporting Designated Uses in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SEGMENT SIZE (MILES) |
|---|---|---|
| Barnett Branch | TN08010204010_0100 | 15.6 |
| Bear Creek | TN08010204010_1300 | 8.1 |
| Buck Creek | TN08010204007_0100 | 29.4 |
| Cain Creek | TN08010204020_0500 | 27.1 |
| Cow Creek | TN08010204021_0100 | 11.8 |
| De Loach Creek | TN08010204010_0800 | 13.4 |
| Dry Branch | TN08010204010_0300 | 9.7 |
| Duffy's Branch | TN08010204010_0200 | 6.4 |
| Harris Creek | TN08010204022_0100 | 11.6 |
| Hog Creek | TN08010204020_0200 | 6.2 |
| Matthews Creek | TN08010204010_0900 | 16.1 |
| Misc tribs to Cypress Creek | TN08010204009_0999 | 56.9 |
| Misc. Tribs | TN08010204003_0999 | 76.8 |
| Misc. Tribs | TN08010204004_0999 | 134.8 |
| Misc. Tribs | TN08010204007_0999 | 79.2 |
| Misc. Tribs | TN08010204010_0999 | 112.6 |
| Misc. tribs | TN08010204014_0999 | 119.1 |
| Misc. tribs | TN08010204020_0999 | 157.4 |
| Misc. Tribs. | TN08010204001_0999 | 19.3 |
| North Fork Forked Deer | TN08010204020_3000 | 9.7 |
| Old Lewis Creek | TN08010204023_0100 | 17.7 |
| Oliver Branch | TN08010204020_0100 | 12.6 |
| Parker Branch | TN08010204020_0400 | 12.0 |
| Spring Creek | TN08010204014_0400 | 19.2 |
| Wallsmith Branch | TN08010204020_0300 | 6.8 |
| Warren Ditch | TN08010204010_1200 | 9.0 |

***Table A3-1d. Streams Not Assessed in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SEGMENT SIZE (ACRES) |
|---|---|---|
| Humboldt Lake | TN08010204HUMBOLDTLK_1000 | 87.0 |

***Table A3-1e. Lakes Not Supporting in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SIZE (MILES) | SUPPORT DESCRIPTION |
|---|---|---|---|
| Beech Creek | TN08010204010_1100 | 23.8 | Partial |
| Bethel Branch | TN08010204022_0200 | 30.4 | Partial |
| Buck Creek | TN08010204017_1000 | 39.8 | Not supporting |
| Cypress Creek | TN08010204009_1000 | 13.0 | Partial |
| Davis Creek | TN08010204017_0100 | 32.6 | Partial |
| Doakville Creek | TN08010204022_1000 | 36.0 | Partial |
| Dry Creek | TN08010204014_0100 | 9.0 | Not supporting |
| Dyer Creek | TN08010204010_0600 | 30.6 | Partial |
| Gilme's Creek | TN08010204013_1000 | 15.3 | Partial |
| Jones Creek | TN08010204023_0200 | 50.6 | Partial |
| Lewis Creek | TN08010204023_1000 | 46.3 | Partial |
| Middle Fork Forked Deer | TN08010204007_1000 | 15.3 | Partial |
| Moize Creek | TN08010204010_0700 | 12.8 | Partial |
| North Fork Forked Deer | TN08010204020_2000 | 8.2 | Partial |
| Pond Creek | TN08010204003_1000 | 24.7 | Not supporting |
| Poplar Creek | TN08010204010_0400 | 9.7 | Partial |
| Reagan Creek | TN08010204017_0110 | 13.3 | Partial |
| Stokes Creek | TN08010204005_1000 | 31.0 | Partial |
| Sugar Creek | TN08010204016_1000 | 26.5 | Partial |
| Turkey Creek | TN08010204015_1000 | 24.3 | Not supporting |

***Table A3-2a. Stream Impairment Due to Habitat Alterations in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SIZE (MILES) | SUPPORT DESCRIPTION |
|---|---|---|---|
| Buck Creek | TN08010204017_1000 | 39.8 | Not supporting |
| Humboldt Lake | TN08010204HUMBOLDTLK_1000 | 87.0 | Not supporting |

***Table A3-2b. Stream Impairment Due to Organic Enrichment/Low Dissolved Oxygen Levels in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SIZE (MILES) | SUPPORT DESCRIPTION |
|---|---|---|---|
| Beech Creek | TN08010204010_1100 | 23.8 | Partial |
| Buck Creek | TN08010204017_1000 | 39.8 | Not supporting |
| Doakville Creek | TN08010204022_1000 | 36.0 | Partial |
| Dry Creek | TN08010204014_0100 | 9.0 | Not supporting |
| Lewis Creek | TN08010204023_1000 | 46.3 | Partial |
| Middle Fork Forked Deer | TN08010204007_1000 | 15.3 | Partial |
| Middle Fork Forked Deer River | TN08010204010_1000 | 9.5 | Partial |
| North Fork Forked Deer River | TN08010204001_1000 | 15.5 | Partial |
| Pond Creek | TN08010204003_1000 | 24.7 | Not supporting |

***Table A3-2c. Stream Impairment Due to Pathogens in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

| SEGMENT NAME | WATERBODY SEGMENT ID | SIZE (MILES) | SUPPORT DESCRIPTION |
|---|---|---|---|
| Buck Creek | TN08010204017_1000 | 39.8 | Not supporting |
| Doakville Creek | TN08010204022_1000 | 36.0 | Partial |
| Johnson Creek | TN08010204010_0500 | 11.0 | Not supporting |
| Lewis Creek | TN08010204023_1000 | 46.3 | Partial |
| Middle Fork Forked Deer | TN08010204007_1000 | 15.3 | Partial |
| North Fork Forked Deer River | TN08010204001_1000 | 15.5 | Partial |
| Pond Creek | TN08010204003_1000 | 24.7 | Not supporting |
| Stokes Creek | TN08010204005_1000 | 31.0 | Partial |
| Sugar Creek | TN08010204016_1000 | 26.5 | Partial |
| Turkey Creek | TN08010204015_1000 | 24.3 | Not supporting |

***Table A3-2d. Stream Impairment Due to Siltation in North Fork Forked Deer River Watershed.*** *Data are based on Year 2000 Water Quality Assessment.*

# APPENDIX IV

| LAND USE/LAND COVER | AREAS IN HUC-10 SUBWATERSHEDS (ACRES) | | | |
|---|---|---|---|---|
| | 01 | 02 | 03 | 04 |
| | | | | |
| Deciduous Forest | 50,628 | 5,900 | 12,740 | 8,512 |
| Evergreen Forest | 4,220 | 581 | 875 | 699 |
| High Intensity: Commercial/Industrial/Transportation | 567 | 378 | 454 | 1,969 |
| High Intensity: Residential | 932 | 365 | 344 | 1,200 |
| Low Intensity: Residential | 4,127 | 1,816 | 2,315 | 2,967 |
| Mixed Forest | 11,712 | 3,859 | 4,996 | 4,745 |
| Open Water | 980 | 2,407 | 1,503 | 2,346 |
| Other Grasses: Urban/Recreational | 101 | 110 | 226 | 378 |
| Pasture/Hay | 40,031 | 43,856 | 62,015 | 35,299 |
| Row Crops | 47,893 | 68,861 | 63,405 | 75,029 |
| Transitional | 274 | 81 | 64 | 211 |
| Woody Wetlands | 7,381 | 11,552 | 6,719 | 11,029 |
| Small Grains | 1,357 | 427 | | 70 |
| Bare Rock/Sand/Clay | | 48 | | 12 |
| Quarries/Strip Mines | 122 | | | |
| **Total** | **170,324** | **140,242** | **155,668** | **144,465** |

***Table A4-1. Land Use Distribution in North Fork Forked Deer 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 | NAME | AREA (SQ MILES) | LOW FLOW (CFS) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1Q10 | 7Q10 | 3Q20 |
| | | | | | | | |
| 07028900 | 0801020401 | USGS | Middle Fork Forked Deer River | 88.2 | 3.88 | 4.23 | 3.48 |
| 07028930 | 0801020401 | USGS | Turkey Creek | | | | |
| 07028940 | 0801020401 | USGS | Turkey Creek | | | | |
| 07028935 | 0801020401 | USGS | Trib to Turkey Creek | | | | |
| 07028950 | 0801020401 | USGS | Turkey Creek | 13.3 | | | 0 |
| FM111 | 0801020401 | USACOE | Middle Fork Forked Deer River | | | | |
| 07029000 | 0801020402 | USGS | Middle Fork Forked Deer River | 369 | 75.2 | 77.0 | 72.8 |
| 07028985 | 0801020402 | USGS | Trib to Middle Fork Forked Deer | | | | |
| 07028500 | 0801020403 | USGS | North Fork Forked Deer River | 73.4 | 7.12 | 7.46 | 6.25 |
| 07028700 | 0801020403 | USGS | Cain Creek | | | | |
| 07028600 | 0801020403 | USGS | Trib to Cain Creek | 0.95 | | | 0 |
| 07028540 | 0801020403 | USGS | Cain Creek | | | | |
| 07029090 | 0801020404 | USGS | Lewis Creek | 25.5 | | | 0 |
| FN111 | 0801020404 | USACOE | North Fork Forked Deer River | | | | |
| 07029100 | 0801020404 | USGS | North Fork Forked Deer River | 867 | 86.4 | 96.2 | 81.6 |
| 07029050 | 0801020404 | USGS | Nash Creek | 7.23 | | | 0 |

***Table A4-3. Historical Streamflow Data Summary Based on Mean Daily Flows in North Fork Forked Deer River Watershed**. USGS, United States Geological Survey; USACOE, United States Army Corps of Engineers.*

| PARAMETER | SUBWATERSHED | | | |
|---|---|---|---|---|
| | 01 | 02 | 03 | 04 |
| E. coli | A | D, G | K, N | P, Q, S, V |
| Fecal Coliform | A | G | K, N | P, Q, S, T, U, V |
| Fecal Streptococcus | | | | T |
| Enterococcus | | G | K,N | Q, S, V |
| | | | | |
| Acidity | | | | U |
| Alkalinity (Total) | A | D, G | K, N | P, Q, S, T, U, V |
| $BOD_5$ | | | | V |
| BOD (C) | | D | K, N | P, Q, S |
| Color (Apparent) | A | | | |
| Color (True) | A | | | |
| Conductivity (Field) | A | D, G | K, N | P, Q, S, T, U, V |
| DO | A | D, G | K, N | P, Q, S, T, U, V |
| Flow | A | | | |
| Hardness (Total) | A | D, G | K, N | P, Q, S, U, V |
| pH (Field) | A | D, G | K, N | P, Q, S, T, U, V |
| pH (Lab) | | | | U |
| Residue (Dissolved) | A | G | K, N | Q, S, V |
| Residue (Settlable) | | D | K, N | P, Q, S, T, U, V |
| Residue (Suspended) | A | D, G | K, N | P, Q, S, T, U, V |
| Residue (Total) | | | | T |
| Temperature | A | D, G | K, N | P, Q, S, T, U, V |
| Turbidity | A | G | K, N | Q, S, V |
| | | | | |
| Biorecon | A | | | |
| RBP III | A | | | |
| | | | | |
| Ammonia N | A | D, G | K, N | P, Q, S, T, U, V |
| As | A | D, G | K, N | P, Q, S, T, U, V |
| Ca | | | | V |
| Cd | A | D, G | K, N | P, Q, S, T, U, V |
| Cr (Total) | A | D, G | K, N | P, Q, S, T, U, V |
| Cu | A | D, G | K, N | P, Q, S, T, U, V |
| Fe | A | D, G | K, N | P, Q, S, T, V |
| Hg | A | | | T, U, V |
| Mg | | | | T |
| Mn | A | D, G | K, N | P, Q, S, T, U, V |
| N (Total Kjeldahl) | A | G | K, N | Q, S, V |
| Ni | A | G | | T, U, V |
| $NO_2$+$NO_3$ | A | D, G | K, N | P, Q, S, T, U, V |
| P (Total) | A | D, G | K, N | P, Q, S, T, U, V |
| Pb | A | D, G | K, N | P, Q, S, T, U, V |
| Se | | | | U |
| $SO_4$ | | | | U |
| TOC | A | G | K, N | Q, S, V |
| Zn | A | D | K, N | P, Q, S, T, U, V |

***Table A4-4a. Water Quality Parameters Monitored in the North Fork Forked Deer River Watershed.*** *Codes are described in Table 4-4b.*

| CODE | STATION | ALIAS | AGENCY | LOCATION |
|---|---|---|---|---|
| A | ECO65E06 | | TDEC | Griffen Creek |
| B | MDFKFKDEER30.5 | | TDEC | Middle Fork Forked Deer River @ RM 30.5 |
| C | MDFKFKDEER49.5 | | TDEC | Middle Fork Forked Deer River @ RM 49.5 |
| D | BIRDS007.4BN | | TDEC | Birdsong Creek @ RM 7.4 |
| E | MFFDE023.4GI | HUMBOLDTSTP01 | TDEC | Middle Fork Forked Deer River @ RM 23.4 |
| F | 001853 | | TDEC | Middle Fork Forked Deer River @ RM 14.6 |
| G | BUCK001.2GI | | TDEC | Buck Creek @ RM 1.2 |
| H | MDFKFKDEER05.2 | | TDEC | Middle Fork Forked Deer River @ RM 5.2 |
| I | MDFKFKDEER07.0 | | TDEC | Middle Fork Forked Deer River @ RM 7.0 |
| J | MDFKFKDEER21.5 | | TDEC | Middle Fork Forked Deer River @ RM 21.5 |
| K | DOAKV002.0DY | | TDEC | Doakville Creek @ RM 2.0 |
| L | MND002.1GI | | TDEC | Mud Creek @ RM 2.1 |
| M | NFFDE036.8 | | TDEC | North Fork Forked Deer River @ RM 36.8 |
| N | NFFDE020.5DY | 001852 | TDEC | North Fork Forked Deer River @ RM 20.5 |
| O | NFKFKDEER36.5 | | TDEC | North Fork Forked Deer River @ RM 36.5 |
| P | MCCOOL1HY | MCCOOL1 | TDEC | McCool Lake #1 |
| Q | LEWIS004.4HY | | TDEC | Lewis Creek @ RM 4.4 |
| R | NFFDE002.2DY | 001854 | TDEC | North Fork Forked Deer River @ RM 2.2 |
| S | NFFDE022.8DY | | TDEC | North Fork Forked Deer River @ RM 22.8 |
| T | 001970 | | TDEC | North Fork Forked Deer River @ RM 6.8 |
| U | NFKFKDEER04.0 | | TDEC | North Fork Forked Deer River @ RM 4.0 |
| V | NFFD007.3DY | NFKFKDEER07.3 | TDEC | North Fork Forked Deer River @ RM 7.3 |

***Table A4-4b. Water Quality Monitoring Stations in the North Fork Forked Deer River Watershed****. TDEC, Tennessee Department of Environment and Conservation; USGS, United States Geologic Survey; TVA, Tennessee Valley Authority; NPS, National Park Service.*

| FACILITY NUMBER | FACILITY NAME | SIC | SIC NAME | MADI | WATERBODY | HUC-10 |
|---|---|---|---|---|---|---|
| TN0023264 | Nova School | 4952 | Sewerage System | Minor | Unnamed Trib to Johnson Creek @ RM 4.4 | 0801020401 |
| TN0056481 | East Elementary School | 4952 | Sewerage System | Minor | Unnamed Trib to MFFD @ RM 35.1 | 0801020401 |
| TN0074811 | Ameristeel | 3312 | Steel Works, Blast Furnaces and Rolling Mills | Minor | Dyer Creek @ RM 1.5, Unnamed Trib to MFFD @ RM 32.5 | 0801020401 |
| TN0075876 | Middle Fork STP | 4952 | Sewerage System | Major | MFFD @ RM 29.1 | 0801020401 |
| TN0062588 | Humboldt Board of Public Utilities STP | 4952 | Sewerage System | Major | MFFD @ RM 23.4 | 0801020402 |
| TN0021750 | Trenton Lagoon | 4952 | Sewerage System | Minor | NFFD @ RM 35.9 | 0801020403 |
| TN0000027 | Heckethorn Manufacturing | 3489 | Ordinance and Accessories | Minor | Unnamed Trib to Old Channel NFFD @ RM 1.3 | 0801020404 |
| TN0000221 | PolyOne Elastomers | 3069 | Fabricated Rubber Products | Minor | Unnamed Trib to NFFD @ RM 6.2 | 0801020404 |
| TN0064017 | Dr. Pepper Pepsi-Cola Bottling Company | 2086 | Bottled and Canned Soft Drinks | Minor | Unnmaed Trib to Pond Creek @ RM 1.2 | 0801020404 |
| TN0072966 | Trunkline Gas Company (Dyersburg Compressor) | 4922 | Natural Gas Transmission | Minor | Unnamed Trib to Nash Creek @ RM 3.0 | 0801020404 |

***Table A4-5. Active Permitted Point Source Facilities in the North Fork Forked Deer River Watershed.*** *SIC, Standard Industrial Classification; MADI, Major Discharge Indicator; WWC, Wet Weather Conveyance.*

| FACILITY NUMBER | PERMITEE | SIC | SIC NAME | WATERBODY | HUC-10 |
|---|---|---|---|---|---|
| TN0071072 | Ford Construction Co. | 1442 | Construction Sand and Gravel | Light Creek | 0801020404 |
| TN0066419 | Memphis Stone and Gravel Company | 1442 | Construction Sand and Gravel | Unnamed Trib to Jones Creek | 0801020404 |

***Table A4-6. Active Permitted Mining Sites in the North Fork Forked Deer River Watershed.***
*SIC, Standard Industrial Classification.*

| FACILITY NUMBER | FACILITY NAME | SECTOR | RECEIVING STREAM | AREA* | HUC-10 |
|---|---|---|---|---|---|
| TNR050189 | Ace Trucking Company | P | Unnamed Trib to Johnson Creek | 6.0 | 0801020401 |
| TNR050553 | AmeriSteel Corporation | F, N, AD, L | Unnamed Trib to MFFD | 290.0 | 0801020401 |
| TNR051052 | Chicago Metallic Products | AA | | 12.1 | 0801020401 |
| TNR051260 | Waste Management of TN | P | Dyer Creek | 3.5 | 0801020401 |
| TNR051362 | Porter-Cable Corporation | AB | MFFD | 69.5 | 0801020401 |
| TNR051444 | Consolidated Freightways | P | | 5.0 | 0801020401 |
| TNR051725 | Con-Way Southern Express | P | Little Sugar Creek | 1.0 | 0801020401 |
| TNR051965 | Delta Faucet Company | AA | Dyer Creek | 9.0 | 0801020401 |
| TNR052040 | Dement Construction Co. | D | Dyer Creek | 16.0 | 0801020401 |
| TNR053017 | Jackson Wilburt Burial Vault | E | MFFD | 3.7 | 0801020401 |
| TNR053060 | AEMP Corporation | AA, F | Unnamed Trib to Dyer Creek | 80.0 | 0801020401 |
| TNR053246 | Milan Express Company | P | Unnamed Trib to Jones Creek | 8.0 | 0801020401 |
| TNR050001 | Emerson Hermetic Motor | AC | MFFD | 21.7 | 0801020402 |
| TNR050075 | DENSO Manufacturing | AC, AB | Laural Bank Branch | 143.5 | 0801020402 |
| TNR050164 | J. Hungerford Smith | U | Lick Creek Ditch to Lick Creek | 3.5 | 0801020402 |
| TNR050586 | Dana Corporation | AB | MFFD | 55.7 | 0801020402 |
| TNR050663 | J&P Auto salvage | M | Reagan Creek | 1.5 | 0801020402 |
| TNR051648 | General Metals Products | AA | Intermittent Stream to MFFD | 20.5 | 0801020402 |
| TNR053282 | Jones Companies | V | Humboldt Storm Sewer | 15.0 | 0801020402 |
| TNR053284 | Jones Companies | V | Humboldt Storm Sewer | 4.0 | 0801020402 |
| TNR053285 | Jones Companies | V | Humboldt Storm Sewer | 10.0 | 0801020402 |
| TNR053286 | Jones Companies | V | Humboldt Storm Sewer | 5.0 | 0801020402 |
| TNR054043 | American Woodwork Corp. | W | MFFD | 25.0 | 0801020402 |
| TNR054110 | C&C Enterprises | N | Duffy's Branch | 1.0 | 0801020402 |
| TNR050285 | TB Woods Incorporated | AB | Cain Creek | 13.0 | 0801020403 |
| TNR050349 | Milan Seating Systems | Y, W, AB | Wolf Creek | 18.5 | 0801020403 |
| TNR051353 | El Dorado Chemical Co. | C | Forked Deer River | 3.0 | 0801020403 |
| TNR051490 | Windsor Forestry Tools | AA | Sand Creek | 2.8 | 0801020403 |
| TNR051538 | Holloway Repair Facility | P | Reed Creek | 12.0 | 0801020403 |
| TNR051854 | CECO Door Products | AA | Unnamed Trib to Clear Creek | 17.3 | 0801020403 |
| TNR053292 | Trenton-Gibson Co Airport | S | NFFD | 104.0 | 0801020403 |
| TNR054052 | Highway 54 Salvage, Inc. | M | Cain Creek | 22.0 | 0801020403 |
| TNR054394 | SR Products | Y | Unnamed Trib to Harris Creek | 9.9 | 0801020403 |
| TNR054477 | Coker's Machine Shop | AB | | 2.0 | |
| TNR054587 | Honeywell Consumer Products | AC | Harris Creek | 23.0 | 0801020403 |
| TNR050241 | Heckethorn Manufacturing Co. | AB | Unnamed Trib to Old Channel NFFD | 38.7 | 0801020403 |
| TNR050617 | Bekaert Corporation | V | Lewis Creek | 14.0 | 0801020404 |
| TNR051292 | Ford Construction Company | D | NFFD | 34.0 | 0801020404 |
| TNR051757 | Electric Research & Manufacturing Co. (ERMCO) | AC | Lewis Creek | 8.5 | 0801020404 |

| | | | | | |
|---|---|---|---|---|---|
| TNR053100 | UPS | P | Forked Deer | 1.0 | 0801020404 |
| TNR053234 | Firestone Industrial Products | AA | Lewis Creek | 15.2 | 0801020404 |
| TNR053298 | Huish Detergents, Incorporated | C | Light Creek | 90.0 | 0801020404 |
| TR053438 | Federal Express | S | Unnamed Trib to Forked Deer River | 0.5 | 0801020404 |
| TNR053896 | QW Memphis Corporation | X | Unnamed Trib to Hunsacker Creek | 20.0 | 0801020404 |
| TNR054224 | Dyersburg Pallet | A | Unnamed Trib to NFFD | 2.0 | 0801020404 |
| TNR054385 | Impressive Manufacturing | AA | Metro Storm Sewer | 2.2 | 0801020404 |
| TNR054386 | Bennett's, Incorporated | AB, AA | Metro Storm Sewer | 0.8 | 0801020404 |
| TNR054398 | Excalibar Minerals | E | Lewis Creek | 13.0 | 0801020404 |
| TNR054579 | Boss Hoss Cycles, Inc. | AB | NFFD | 5.5 | 0801020404 |

***Table A4-7. Active Permitted TMSP Facilities in the North Fork Forked Deer River Watershed.*** *Area, acres of property associated with industrial activity. Sector details may be found I Table A4-8.*

| 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 A4-8. TMSP Sectors and Descriptions.***

| FACILITY NUMBER | PERMITEE | COUNTY | LIVESTOCK | WATERBODY | HUC-10 |
|---|---|---|---|---|---|
| TNA000017 | Nichols Farms, Inc. | Madison | Swine | Johnson Creek | 0801020401 |

***Table A4-9. CAFO Sites in the North Fork Forked Deer River Watershed.***

| LOG NUMBER | COUNTY | DESCRIPTION | WATERBODY | HUC-10 |
|---|---|---|---|---|
| 98.641 | Carroll | Channel Excavation | Unnamed Trib to MFFD River | 0801020401 |
| 99.013 | Gibson | Box Bridge Construction | Sugar Creek | 0801020401 |
| 99.014 | Gibson | Box Culvert | Turkey Creek | 0801020401 |
| 99.137 | Madison | Wetland Fill (0.66 Acre) | Unnamed Trib to MFFD River | 0801020401 |
| 99.394 | Madison | Bridge Construction | Moize Creek | 0801020401 |
| 99.522F | Madison | Debris Removal | Unnamed Trib to Turkey Creek | 0801020401 |
| 99.522G | Madison | Debris Removal | Unnamed Trib to Turkey Creek | 0801020401 |
| 99.522O | Madison | Debris Removal | Dry Creek | 0801020401 |
| 99.522Q | Madison | Debris Removal | Unnamed Trib to Turkey Creek | 0801020401 |
| 99.450 | Gibson | Old Channel Maintenance | Forked Deer River | 0801020402 |
| 98.100 | Gibson | Impoundment | Thompson Creek | 0801020403 |
| 98.222 | Gibson | Box Culvert | Unnamed Trib to NFFD River | 0801020403 |
| 98.223 | Gibson | Box Culvert | Unnamed Trib to NFFD River | 0801020403 |
| 98.224 | Gibson | Box Culvert | Cow Creek | 0801020403 |
| 98.225 | Gibson | Box Culvert | Sand Creek | 0801020403 |
| 98.226 | Gibson | Box Culvert | Unnamed Trib to NFFD River | 0801020403 |
| 98.227 | Gibson | Box Culvert | Unnamed Trib to NFFD River | 0801020403 |
| 98.228 | Gibson | Box Culvert | Rogers Branch | 0801020403 |
| 98.229 | Gibson | Box Culvert | Unnamed Trib to NFFD River | 0801020403 |
| 98.230 | Gibson | Box Culvert | Cow Creek | 0801020403 |
| 98.231 | Gibson | Culvert | Sand Creek | 0801020403 |
| 98.535 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 98.536 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 98.537 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 98.538 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 98.539 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 98.540 | Gibson | Culvert | Unnamed Trib to Cain Creek | 0801020403 |
| 99.047 | Lauderdale | Bridge Scour Repair | Mud Creek | 0801020403 |
| 99.350 | Gibson | Box Culvert Lean-out | Unnamed Trib to NFFD River | 0801020403 |
| 98.649 | Crockett | Debris Removal | Pond Creek | 0801020404 |
| 99.131 | Dyer | Impoundment | Lewis Creek, Trib to NFFD | 0801020404 |
| 99.456 | Dyer | Debris Removal | Hunsacker Creek | 0801020404 |

***Table A4-10. Individual ARAP Permits Issued January 1994 Through June 2000 in the North Fork Forked Deer River Watershed.***

# APPENDIX V

| CONSERVATION PRACTICE | UNITS | AMOUNT |
|---|---|---|
| Alley Cropping | Acres | 0 |
| Contour Buffer Strips | Acres | 0 |
| Crosswind Trap Strips | Acres | 0 |
| Field Borders | Feet | 0 |
| Filter Strips | Acres | 79 |
| Grassed Waterways | Acres | 4 |
| Riparian Forest Buffers | Acres | 16 |
| Streambank and Shoreline Protection | Feet | 0 |
| Windbreaks and Shelterbelts | Feet | 0 |
| Hedgerow Plantings | Feet | 0 |
| Herbaceous Wind Barriers | Feet | 0 |
| Total Conservation Buffers | Acres | 99 |

***Table A5-1a. Conservation Buffers Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from Performance & Results Measurement System (PRMS) for October 1, 2001 through September 30, 2002 reporting period.*

| PARAMETER | TOTAL |
|---|---|
| Erosion Reduction Applied (Acres) | 14,955 |
| Highly Erodible Land With Erosion Control Practices (Acres) | 13,189 |
| Estimated Annual Soil Saved By Erosion Control Measures (Tons/Year) | 185,255 |
| Total Estimated Soil Saved (Tons/Year) | 185,255 |

***Table A5-1b. Erosion Control Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| PARAMETER | TOTAL |
|---|---|
| Acres of AFO Nutrient Management Applied | 25 |
| Acres of Non-AFO Nutrient Management Applied | 9,110 |
| Total Acres Applied | 9,135 |

***Table A5-1c. Nutrient Management Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| PARAMETER | TOTAL |
|---|---|
| Acres of Pest Management Systems Applied | 9,792 |

***Table A5-1d. Pest Management Conservation Practices in Partnership with NRCS in Noreth Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| CONSERVATION PRACTICE | ACRES |
|---|---|
| Acres Prepared for Revegetation of Forestland | 0 |
| Acres Improved Through Forest Stand Improvement | 0 |
| Acres of Tree and Shrub Establishment | 110 |

***Table A5-1e. Tree and Shrub Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| CONSERVATION PRACTICE | ACRES |
|---|---|
| Acres of Wetlands Created or Restored | 221 |
| Acres of Wetlands Enhanced | 0 |
| Total Acres Created, Restored, or Enhanced | 221 |

***Table A5-1f. Wetland Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| CONSERVATION PRACTICE | ACRES |
|---|---|
| Acres of Upland Habitat Management | 3,048 |
| Acres of Wetland Habitat Management | 0 |
| Total Acres Wildlife Habitat Management | 3,048 |

***Table A5-1g. Wildlife Habitat Management Conservation Practices in Partnership with NRCS in North Fork Forked Deer River Watershed.*** *Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period.*

| COMMUNITY | PROJECT DESCRIPTION | AWARD DATE | AWARD AMOUNT |
|---|---|---|---|
| Dyersburg | Wastewater Treatment Plant Upgrade And Expansion | 04/06/92 | $5,710,000 |
| Humboldt | Wastewater Treatment Plant Upgrade | 05/01/95 | $3,315,000 |
| Maury City | Wastewater Treatment Plant And Collection System | 04/15/92 | $2,348,166 |
| Newbern | Wastewater Treatment Plant Upgrade And Expansion | 03/26/93 | $1,544,370 |

***Table A5-2. Communities in North Fork Forked Deer River Watershed Receiving SRF Grants or Loans.***

| NRCS CODE | PRACTICE | NUMBER OF BMPs |
|---|---|---|
| 329 | Conservation Tillage | 1 |
| 340 | Winter Cover | 10 |
| 342 | Critical Area Treatment | 2 |
| 350 | Sediment basin | 3 |
| 362 | Diversion | 33 |
| 378 | Pond | 7 |
| 382 | Fencing | 2 |
| 386 | Field Border | 1 |
| 410 | Grade Stabilization Structure | 35 |
| 412 | Grass waterway | 5 |
| 512 | Pasture or Hayland Renovation | 19 |
| 512a | Cropland Conversion | 3 |
| 516 | Pond | 1 |
| 561 | Heavy Use Area | 1 |
| 580 | Stream Stabilization | 1 |
| 600 | Terrace | 52 |
| 638 | Water/Sediment Control Basin | 58 |
| 645 | Wildlife Upland Management | 1 |

***Table A5-3. Best Management Practices Installed by Tennessee Department of Agriculture and Partners in North Fork Forked Deer River Watershed.***