TOTAL MAXIMUM DAILY LOAD (TMDL)

For

Siltation and Habitat Alteration

In The

Nolichucky River Watershed (HUC 06010108)

Cocke, Greene, Hamblen, Hawkins, Jefferson, Unicoi, and Washington, Counties, Tennessee

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February 5, 2008

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LIST OF ABBREVIATIONS

ADB	USEPA/TDEC Assessment Database
ARS	Agriculture Research Station
BMP	Best Management Practices
CFR	Code of Federal Regulations
DEM	Digital Elevation Model
EFO	Environmental Field Office
GIS	Geographic Information System
HUC	Hydrologic Unit Code
LA	Load Allocation
MGD	Million Gallons per Day
MOS	Margin of Safety
MRLC	Multi-Resolution Land Characteristic
MS4	Municipal Separate Storm Sewer System
NED	National Elevation Dataset
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NRCS	Natural Resource Conservation Service
NRI	National Resources Inventory
RM	River Mile
RMCF	Ready Mixed Concrete Facility
SSURGO	Soil Survey Geographic Database
STATSGO	State Soil and Geographic Database
STP	Sewage Treatment Plant
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TDA	Tennessee Department of Agriculture
TDEC	Tennessee Department of Environment & Conservation
TDOT	Tennessee Department of Transportation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TVA	Tennessee Valley Authority
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
WCS	Watershed Characterization System
WLA	Waste Load Allocation
WWTF	Wastewater Treatment Facility

SUMMARY SHEET

NOLICHUCKY RIVER WATERSHED (HUC 06010108)

Total Maximum Daily Load for Waterbodies Impaired Due to Siltation/Habitat Alteration

Impaired Waterbody Information:

State: Tennessee
Counties: Cocke, Greene, Hamblen, Hawkins, Jefferson, Unicoi, and Washington
Watershed: Nolichucky River Watershed (HUC 06010108)
Watershed Area: 1,128.6 mi^2
Constituent of Concern: Siltation/Habitat Alteration
Impaired Waterbodies: *2006 303(d) List*

Waterbody ID	Impacted Waterbody	Miles/Acres Impaired
TN06010108001_0110	Robinson Creek	3.4
TN06010108001_0200	Turkey Creek	5.8
TN06010108001_1000	Nolichucky River	4.0
TN06010108001_3000	Nolichucky River	9.0
TN06010108005_0310	Privet Branch	1.4
TN06010108005_0500	Gregg Branch	2.7
TN06010108005_0710	Shelton Branch	1.23
TN06010108005_0800	Kyker Branch	2.5
TN06010108005_1000	Nolichucky River	9.4
TN06010108005_1121	Rader Branch	2.0
TN06010108005_2000	Nolichucky River	6.6
TN06010108005_3000	Nolichucky River	6.4
TN06010108009_0300	Cedar Creek	5.4
TN06010108009_1000	Cove Creek	29.7
TN06010108010_0200	Holley Creek	8.5
TN06010108010_0300	College Creek	9.3
TN06010108010_0400	Moon Creek	8.7
TN06010108010_0500	Pudding Creek	5.5
TN06010108010_0750	Rheatown Creek	6.7
TN06010108010_0800	Hice Creek	2.1
TN06010108010_0900	Snapp Branch	1.9
TN06010108010_1000, _2000 & _3000	Nolichucky River	38.5
TN06010108010_1100	Asbury Creek	2.33
TN06010108010_1200	Knave Branch	4.6
TN06010108010_1300	Keplinger Creek	5.3

Waterbody ID	Impacted Waterbody	Miles/Acres Impaired
TN06010108010_1400	Lebanon Branch	1.9
TN06010108010_1900	Martins Creek	8.3
TN06010108010_1910	Spring Creek	1.7
TN06010108010_3100	Katy Branch	0.8
TN06010108010_3600	Moore Branch	7.7
TN06010108010_3800	Wolf Branch	1.3
TN06010108010_6000	Nolichucky River	2.06
TN06010108029_0300	Scioto Creek	14.8
TN06010108029_1000	North Indian Creek	8.0
TN06010108030_0100	Cedar Creek	3.3
TN06010108030_0200	Jockey Creek	8.0
TN06010108030_0210	Splatter Creek	3.6
TN06010108030_0220	Carson Creek	17.9
TN06010108030_0300	Keebler Branch	7.4
TN06010108030_0400	Clear Fork	12
TN06010108030_0420	Unnamed Trib To Clear Fork	6.9
TN06010108030_0431	Leesburg Branch	3.4
TN06010108030_2000	Big Limestone Creek	8.8
TN06010108033_0100	Buffalo Creek	3.0
TN06010108035_0200	Potter Creek	15.3
TN06010108035_0400	Mud Creek	4.4
TN06010108035_0700	Lick Branch	1.2
TN06010108035_0900	Puncheon Camp Creek	11.5
TN06010108035_1000	Lick Creek	3.9
TN06010108035_1110	Babb Creek	4.6
TN06010108035_1400	Gardiner Creek	5.4
TN06010108035_1410	Wattenbarger Creek	5.3
TN06010108035_1900	Clear Creek	19.9
TN06010108035_2300	Horse Fork	1.6
TN06010108035_2310	Union Temple Creek	23.9
TN06010108035_2320	Davis Creek	2.8
TN06010108035_2400	Hoodley Branch	5.3
TN06010108035_2521	Possum Creek	7.5
TN06010108035_2810	Pond Creek	2.2
TN06010108035_2900	Fox Branch	1.5
TN06010108035_3000	Lick Creek	7.4

Waterbody ID	Impacted Waterbody	Miles/Acres Impaired
TN06010108035_5000, _6000 & _7000	Lick Creek	36.1
TN06010108035_9000	Lick Creek	7.7
TN06010108042_0100	Hale Branch	7.1
TN06010108042_0110	Slop Creek	1.7
TN06010108042_0612	Coldspring Branch	1.1
TN06010108043_0200	Crider Creek	6.2
TN06010108043_0300	Sartain Creek	4.4
TN06010108043_0310	Carter Branch	3.5
TN06010108043_0400	Cedar Creek	7.5
TN06010108088_0200	Alexander Creek	2.8
TN06010108102_0100	Unnamed Trib To Richland Creek	4.05
TN06010108102_0200	Simpson Creek	1.87
TN06010108102_0300	Tipton Creek	1.60
TN06010108102_0400	East Fork Richland Creek	4.96
TN06010108102_2000	Richland Creek	8.51
TN06010108456_0200	Dry Creek	3.3
TN06010108510_0100	Brown Branch	8.3
TN06010108510_0200	Bacon Branch	4.6
TN06010108510_0300	Feist Branch	2.3
TN06010108510_0500	Onion Creek	4.0
TN06010108510_2000	Little Limestone Creek	13.5
TN06010108536_0100	Loyd Creek	4.2
TN06010108536_0200	Little Cherokee Creek	7.2
TN06010108536_1000 & _2000	Cherokee Creek	20.8
TN06010108DCROCKETT_1000	Davy Crockett Reservoir	383 ac
TN06010108DCTRIBS_0100	Mutton Creek	1.7
TN06010108DCTRIBS_0200	Johnson Creek	1.4
TN06010108DCTRIBS_0500	Mud Creek	21.4
TN06010108DCTRIBS_0600	Flag Branch	5.8

Designated Uses: Fish & Aquatic Life, Irrigation, Livestock Watering & Wildlife, and Recreation. Some waterbodies in watershed also classified for Domestic Water Supply, Industrial Water Supply, Naturally Reproducing Trout Stream, and/or Trout Stream (TDEC, 2004).

Applicable Water Quality Standard: Most stringent narrative criteria applicable to Fish & Aquatic Life use classification.

Biological Integrity: The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or adversely affected, except as allowed under 1200-4-3-.06.

Interpretation of this provision for any stream which (a) has at least 80% of the upstream catchment area contained within a single bioregion and (b) is of the appropriate stream order specified for the bioregion and (c) contains the habitat (riffle or rooted bank) specified for the bioregion, may be made using the most current revision of the Department's Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys and/or other scientifically defensible methods.

Interpretation of this provision for all other streams, plus large rivers, reservoirs, and wetlands, may be made using Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers (EPA/841-B-99-002) and/or other scientifically defensible methods. Effects to biological populations will be measured by comparisons to upstream conditions or to appropriately selected reference sites in the same bioregion if upstream conditions are determined to be degraded.

Habitat: The quality of instream habitat shall provide for the development of a diverse aquatic community that meets regionally based biological integrity goals. The instream habitat within each subecoregion shall be generally similar to that found at reference streams. However, streams shall not be assessed as impacted by habitat loss if it has been demonstrated that the biological integrity goal has been met.

TMDL Development

Primary Analysis Methodology:

- Primary analysis was performed using the Watershed Characterization System Sediment Tool (based on Universal Soil Loss Equation (USLE)) applied to impaired HUC-12 subwatershed areas to calculate existing sediment loads.

- Target sediment loads (lbs/acre/year) were based on the average annual instream sediment load from biologically healthy watersheds (Level IV Ecoregion reference sites).

- The percent reduction in average annual instream sediment load required for a subwatershed containing impaired waterbodies relative to the appropriate target load was calculated.

- 5% of subwatershed target loads are reserved to account for sediment loading due to Ready Mixed Concrete Facilities (RMCFs) and regulated mining sites. Most loading from these sources is very small compared to total loading. Since the Total Suspended

Solids (TSS) component of Sewage Treatment Plant (STP) discharges is generally composed of primarily organic material and is considered to be different in nature than the sediments produced from erosional processes, TSS discharges from STPs were not considered in the TMDL analysis (ref.: Sections 3.0 and 6.0).

- Allocations for National Pollution Discharge Elimination System (NPDES) regulated construction storm water discharges are expressed as technology-based average annual erosion loads per unit area disturbed.
- For Municipal Separate Storm Sewer Systems (MS4s) and nonpoint sources, the percent reduction in average annual instream sediment load required for a subwatershed containing impaired waterbodies relative to the appropriate reduced target load (target load minus the percent reserved for RMCFs, regulated mining sites, and CSW sites).
- Allowable daily loads were derived for precipitation induced loading sources by dividing the appropriate annual loads by the average annual precipitation in each impaired subwatershed.

Supplemental Analysis for Selected Subwatersheds:

- Due to localized conditions, additional analysis was required for impaired subwatersheds 060101080601, 060101080702, and 060101080703. Additional requirements based on habitat assessment scores of ecoregion reference sites were determined for these subwatersheds.
- TMDLs, WLAs for MS4s and LAs for nonpoint sources include a minimum habitat score for subwatersheds 060101080601, 060101080702, and 060101080703.

Critical Conditions: Methodology takes into account all flow conditions.

Seasonal Variation: Methodology addresses all seasons.

Margin of Safety (MOS): Implicit (conservative modeling assumptions).

TMDLs, WLAs, and LAs

TMDLs for impaired HUC-12 subwatersheds are tabulated in Tables 8 and 9.

WLAs for NPDES permitted Ready Mix Concrete Facilities (RMCFs) and mining sites located in impaired subwatersheds are equal to existing permit requirements for these facilities. WLAs for construction storm water sites, WLAs for MS4s, and LAs for nonpoint sources are summarized in Tables 10 and 11.

TOTAL MAXIMUM DAILY LOAD (TMDL) FOR SILTATION/HABITAT ALTERATION NOLICHUCKY RIVER WATERSHED (HUC 06010108)

1.0 INTRODUCTION

Section 303(d) of the Clean Water Act requires each state to list those waters within its boundaries for which technology based effluent limitations are not stringent enough to protect any water quality standard applicable to such waters. Listed waters are prioritized with respect to designated use classifications and the severity of pollution. In accordance with this prioritization, states are required to develop Total Maximum Daily Loads (TMDLs) for those water bodies that are not attaining water quality standards. State water quality standards consist of designated use(s) for individual waterbodies, appropriate numeric and narrative water quality criteria protective of the designated uses, and an antidegradation statement. The TMDL process establishes the maximum allowable loadings of pollutants for a waterbody that will allow the waterbody to maintain water quality standards. The TMDL may then be used to develop controls for reducing pollution from both point and nonpoint sources in order to restore and maintain the quality of water resources (USEPA, 1991).

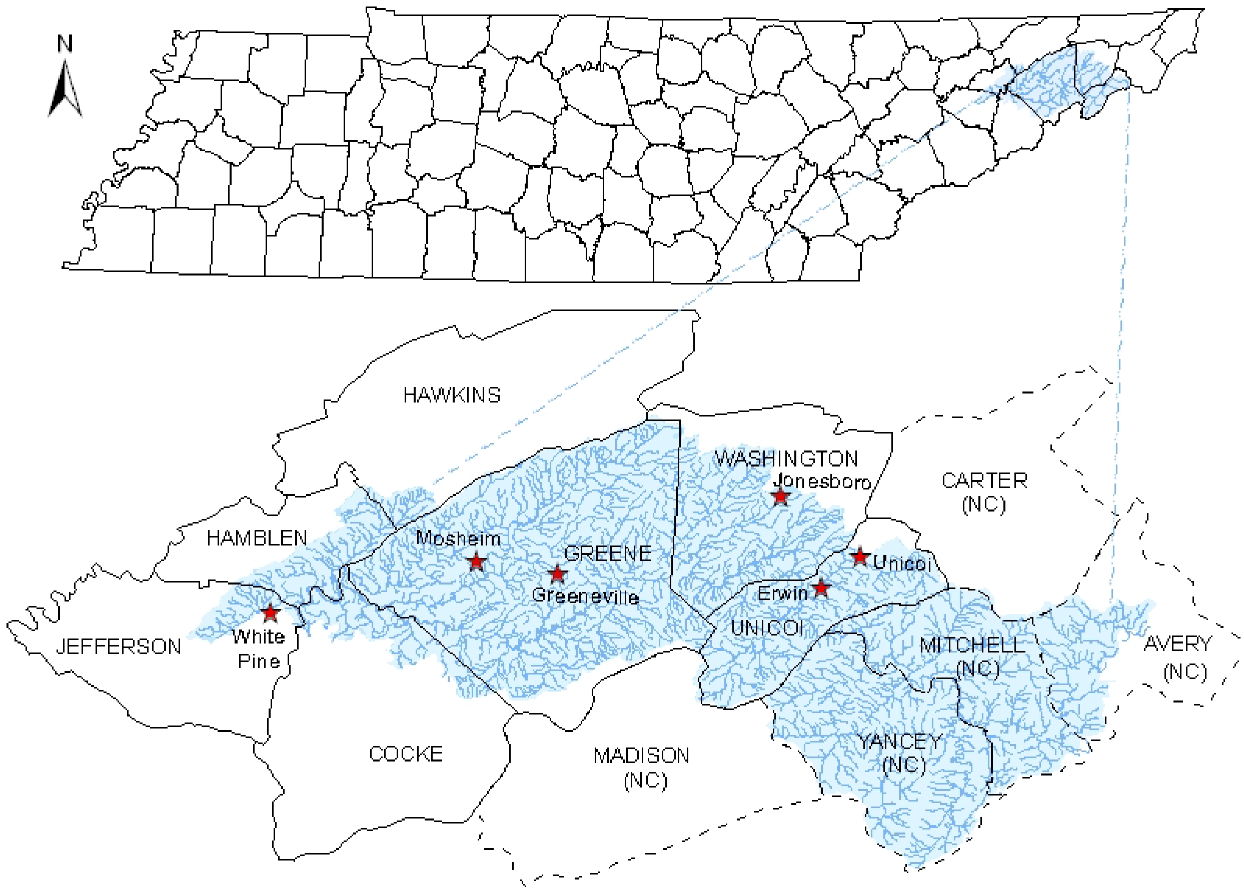
2.0 WATERSHED DESCRIPTION

The Nolichucky River Watershed, Hydrologic Unit Code (HUC) 06010108, is located in North Carolina and East Tennessee (ref.: Figure 1). The information (including figures and tables) presented hereafter in this document is for the Tennessee portion of the watershed only. The watershed includes parts of Cocke, Greene, Hamblen, Hawkins, Jefferson, Unicoi, and Washington counties in Tennessee. The Nolichucky River Watershed lies within two Level III ecoregions (Blue Ridge Mountains and Ridge and Valley) and contains eight Level IV subecoregions as shown in Figure 2 (USEPA, 1997):

- Southern Igneous Ridges and Mountains (66d) occur in Tennessee's northeastern Blue Ridge near the North Carolina border, primarily on Precambrian-age igneous and high-grade metamorphic rocks. The typical crystalline rock types include granite, gneiss, schist, and metavolcanics, covered by well-drained, acidic brown loamy soils. Elevations of this rough, dissected region range from 2,000-6,200 feet, with Roan Mountain reaching 6,286 feet. Although there are a few small areas of pasture and apple orchards, the region is mostly forested; Appalachian oak and northern hardwood forests predominate.

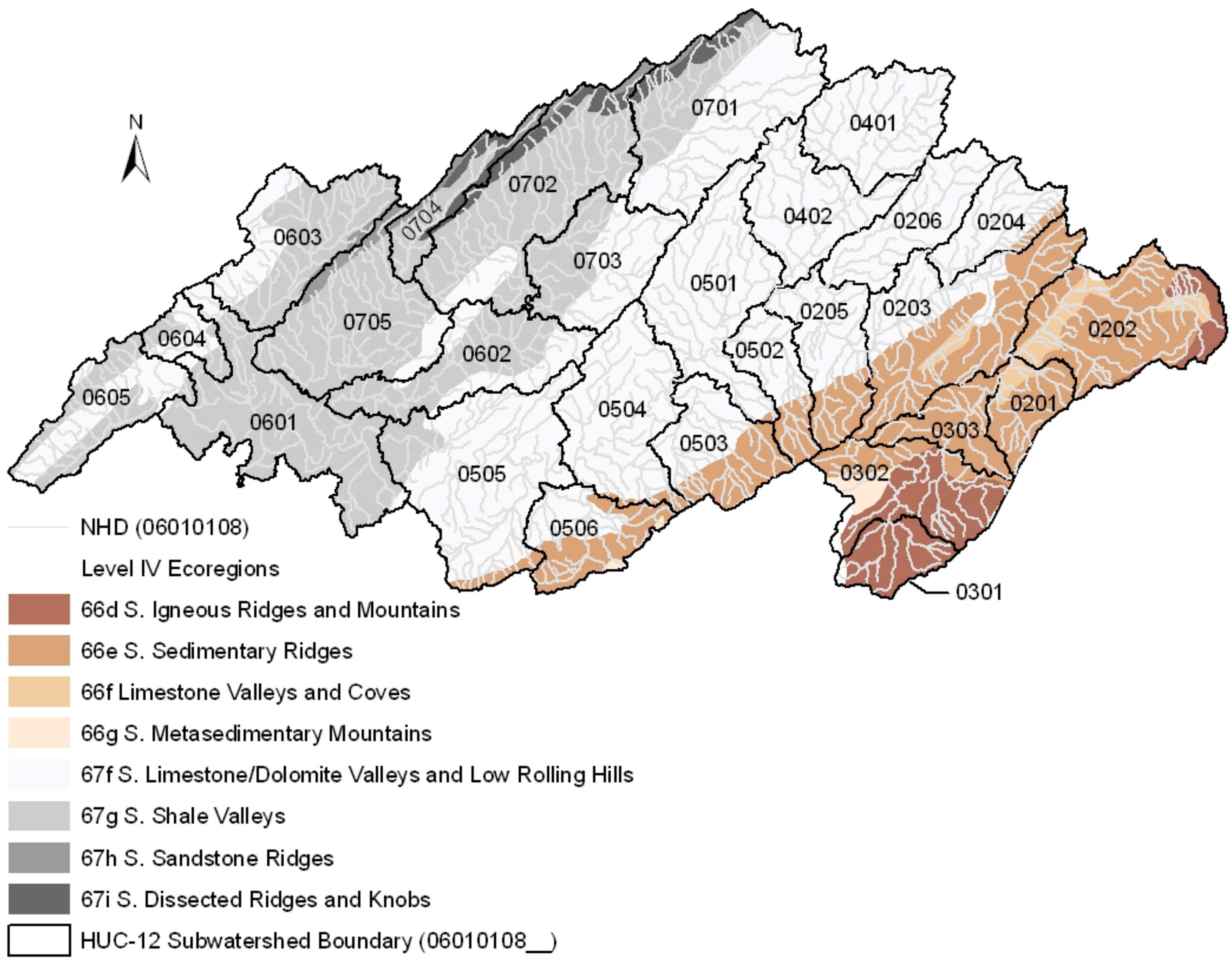
- The Southern Sedimentary Ridges (66e) in Tennessee include some of the westernmost foothill areas of the Blue Ridges Mountains ecoregion, such as the Bean, Starr, Chilhowee, English, Stone, Bald, and Iron Mountain areas. Slopes are steep, and elevations are generally 1,000-4,500 feet. The rocks are primarily Cambrian-age sedimentary (shale, sandstone, siltstone, quartzite, conglomerate), although some lower stream reaches occur on limestone. Soils are predominantly friable loams and fine sandy loams with variable amounts of sandstone rock fragments, and support mostly mixed oak and oak-pine forests.

Figure 1 Location of the Nolichucky River Watershed



- Limestone Valleys and Coves (66f) are small but distinct lowland areas of the Blue Ridge, with elevations mostly between 1,500 and 2,500 feet. About 450 million years ago, older Blue Ridge rocks to the east were forced up and over younger rocks to the west. In places, the Precambrian rocks have eroded through to Cambrian or Ordovician-age limestones, as seen especially in isolated, deep cove areas that are surrounded by steep mountains. The main areas of limestone include the Mountain City lowland area and Shady Valley in the north; and Wear Cove, Tuckaleechee Cove, and Cades Cove of the Great Smoky Mountains in the south. Hay and pasture, with some tobacco patches on small farms, are typical land uses.

Figure 2 Level IV Ecoregions in the Nolichucky River Watershed



- The Southern Metasedimentary Mountains (66g) are steep, dissected, biologically-diverse mountains that include Clingmans Dome (6,643 feet), the highest point in Tennessee. The Precambrian-age metamorphic and sedimentary geologic materials are generally older and more metamorphosed than the Southern Sedimentary Ridges (66e) to the west and north. The Appalachian oak forests and, at higher elevations, the northern hardwoods forests include a variety of oaks and pines, as well as silverbell, hemlock, yellow poplar, basswood, buckeye, yellow birch, and beech. Spruce-fir forests, found generally above 5,500 feet, have been affected greatly over the past twenty-five years by the balsam woolly aphid. The Copper Basin, in the southeast corner of Tennessee, was the site of copper mining and smelting from the 1850s to 1987, and once left more than fifty square miles of eroded earth.

- The Southern Limestone/Dolomite Valleys and Low Rolling Hills (67f) form a heterogeneous region composed predominantly of limestone and cherty dolomite. Landforms are mostly low rolling ridges and valleys, and the solids vary in their productivity. Landcover includes intensive agriculture, urban and industrial, or areas of thick forest. White oak forests, bottomland oak forests, and sycamore-ash-elm riparian forests are the common forest types, and grassland barrens intermixed with cedar-pine glades also occur here.

- The Southern Shale Valleys (67g) consist of lowlands, rolling valleys, and slopes and hilly areas that are dominated by shale materials. The northern areas are associated with Ordovician-age calcareous shale, and the well-drained soils are often slightly acid to neutral. In the south, the shale valleys are associated with Cambrian-age shales that contain some narrow bands of limestone, but the soils tend to be strongly acid. Small farms and rural residences subdivide the land. The steeper slopes are used for pasture or have reverted to brush and forested land, while small fields of hay, corn, tobacco, and garden crops are grown on the foot slopes and bottomland.

- The Southern Sandstone Ridges (67h) ecoregion encompasses the major sandstone ridges, but these ridges also have areas of shale and siltstone. The steep, forested chemistry of streams flowing down the ridges can vary greatly depending on the geologic material. The higher elevation ridges are in the north, including Wallen Ridge, Powell Mountain, Clinch Mountain, and Bays Mountain. White Oak Mountain in the south has some sandstone on the west side, but abundant shale and limestone as well. Grindstone Mountain, capped by the Gizzard Group sandstone, is the only remnant of Pennsylvanian-age strata in the Ridge and Valley of Tennessee.

- The Southern Dissected Ridges and Knobs (67i) contain more crenulated, broken, or hummocky ridges, compared to smoother, more sharply pointed sandstone ridges. Although shale is common, there is a mixture and interbedding of geologic materials. The ridges on the east side of Tennessee's Ridge and Valley tend to be associated with the Ordovician-age Sevier shale, Athens shale, and Holston and Lenoir limestones. These can include calcareous shale, limestone, siltstone, sandstone, and conglomerate. In the central and western part of the ecoregion, the shale ridges are associated with the Cambrian-age Rome Formation: shale and siltstone with beds of sandstone. Chestnut oak forests and pine forests are typical for the higher elevations of the ridges, with areas of white oak, mixed mesophytic forest, and tulip poplar on the lower slopes, knobs, and draws.

The Tennessee portion of the Nolichucky River Watershed (HUC 06010108) has approximately 1,920 miles of streams and 383 reservoir/lake acres (based on USEPA/TDEC Assessment Database (ADB)) and drains approximately 1,129 square miles to the Nolichucky River, which drains to the French Broad River as part of the Tennessee River Basin. Watershed land use distribution is based on the 1992 Multi-Resolution Land Characteristic (MRLC) satellite imagery databases derived from Landsat Thematic Mapper digital images from 1992-1995. Land use for the Nolichucky River Watershed is summarized in Table 1 and shown in Figure 3.

3.0 PROBLEM DEFINITION

The State of Tennessee's *2006 303(d) List* (TDEC, 2006) identified a number of waterbodies in the Nolichucky River Watershed as not fully supporting designated use classifications due, in part, to siltation and/or habitat alteration associated with agriculture, urban runoff, land development, and bank modification. These waterbodies are summarized in Table 2 and shown in Figures 4 and 5. The designated use classifications for the Nolichucky and its tributaries include Fish & Aquatic Life, Irrigation, Livestock Watering & Wildlife, and Recreation. Some waterbodies in the watershed are also classified for Domestic Water Supply, Industrial Water Supply, Naturally Reproducing Trout Stream, and/or Trout Stream (TDEC, 2004).

Table 1 Land Use Distribution - Nolichucky River Watershed

Land use	**Area**		
	[acres]	[mi^2]	[% of watershed]
Bare Rock/Sand/Clay	1,974	3.1	0.3
Deciduous Forest	222,860	348.2	30.9
Emergent Herbaceous Wetlands	162	0.3	0.0
Evergreen Forest	88,332	138.0	12.2
High Intensity Commercial/Industrial/Transportation	5,799	9.1	0.8
High Intensity Residential	869	1.4	0.1
Low Intensity Residential	10,363	16.2	1.4
Mixed Forest	131,043	204.8	18.1
Open Water	2,608	4.1	0.4
Other Grasses (Urban/recreational)	4,553	7.1	0.6
Pasture/Hay	203,168	317.5	28.1
Quarries/Strip Mines/Gravel Pits	143	0.2	0.0
Row Crops	49,333	77.1	6.8
Transitional	39	0.1	0.0
Woody Wetlands	1,086	1.7	0.2
Total	722,333	1,128.6	100.0

Note: A spreadsheet was used for this calculation and values are approximate due to rounding.

Figure 3 MRLC Land Use in the Nolichucky River Watershed

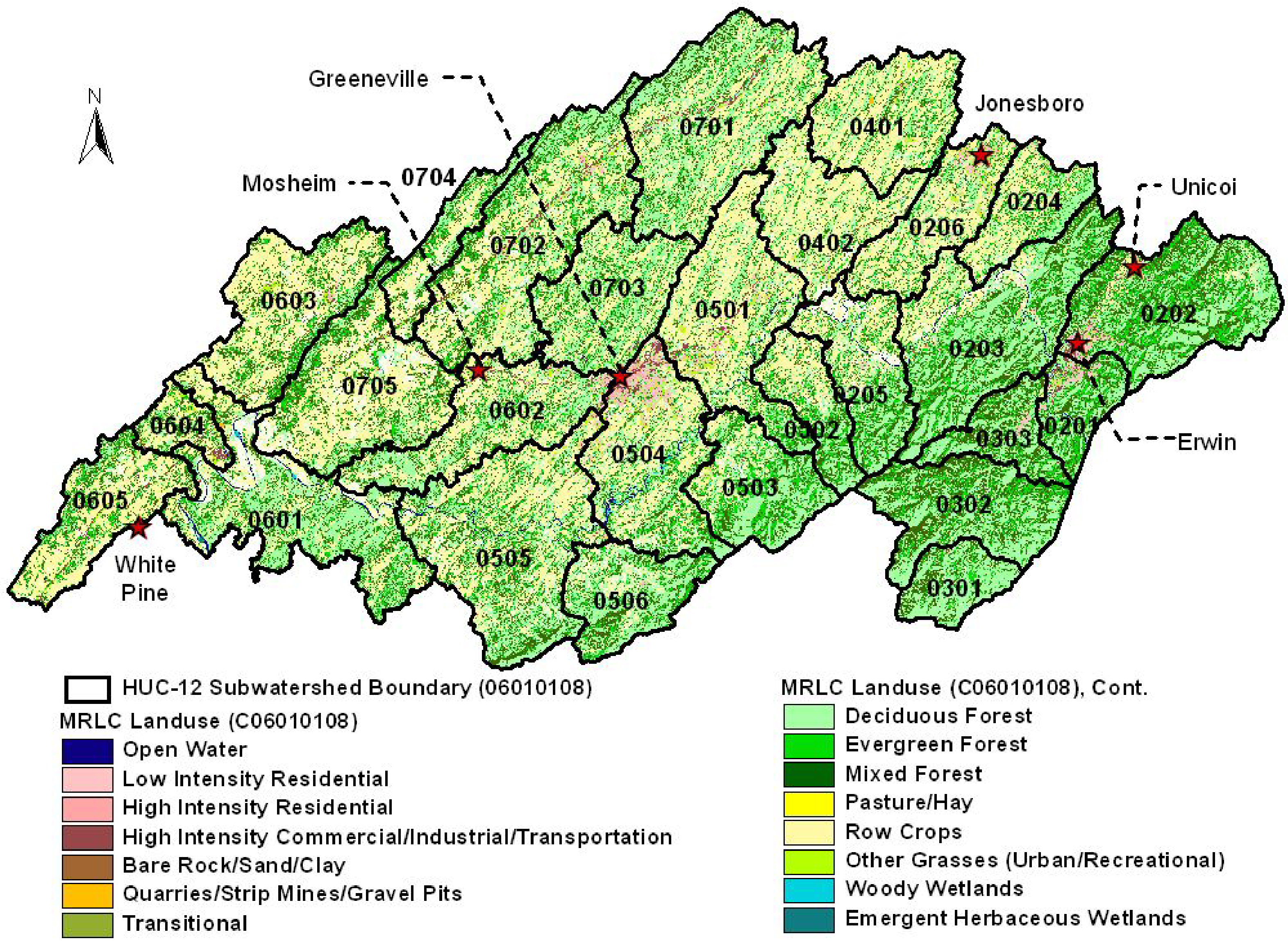


Table 2 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0201	TN06010108010_1900	Martins Creek	8.3	Habitat loss due to alteration in stream-side or littoral vegetative cover	Discharges from MS4 area
	TN06010108010_1910	Spring Creek	1.7	Habitat loss due to alteration in stream-side or littoral vegetative cover	Discharges from MS4 area
	TN06010108010_6000	Nolichucky River	3.2	Loss of biological integrity due to siltation	Source in Other State
0202	TN06010108029_0300	Scioto Creek	14.8	Loss of biological integrity due to siltation	Land Development
	TN06010108029_1000	North Indian Creek	8.0	Loss of biological integrity due to siltation	Discharges from MS4 area
0203	TN06010108010_1200	Knave Branch	4.6	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_1300	Keplinger Creek	5.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_1400	Lebanon Branch	1.9	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_3000*	Nolichucky River	5.4	Loss of biological integrity due to siltation	Agriculture/Source in Other State

*TN06010108010_3000 extends into HUC-12 subwatersheds 0203 and 0205

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0203, cont.	TN06010108010_3100	Katy Branch	0.8	Loss of biological integrity due to siltation	Agriculture
0204	TN06010108536_0100	Loyd Creek	4.2	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108536_0200	Little Cherokee Creek	7.2	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Land Development
	TN06010108536_1000 & _2000	Cherokee Creek	20.8	Loss of biological integrity due to siltation	Pasture Grazing Land Development
0205	TN06010108010_0900	Snapp Branch	1.9	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_3000*	Nolichucky River	17.2	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108010_1100	Asbury Creek	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_3600	Moore Branch	7.7	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
0206	TN06010108510_0100	Brown Branch	8.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Land Development

*TN06010108010_3000 extends into HUC-12 subwatersheds 0203 and 0205

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0206, cont.	TN06010108510_0200	Bacon Branch	4.6	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108510_0300	Feist Branch	2.3	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108510_0500	Onion Creek	4.0	Loss of biological integrity due to siltation	Pasture Grazing Land Development
	TN06010108510_2000	Little Limestone Creek	13.5	Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing
0401	TN06010108030_0400	Clear Fork	12.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108030_0420	Unnamed Trib To Clear Fork	6.9	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108030_0431	Leesburg Branch	3.4	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
0402	TN06010108030_0100	Cedar Creek	3.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108030_0200	Jockey Creek	8.0	Nitrate/Loss of biological integrity due to siltation/Escherichia coli	Pasture Grazing

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0402, cont.	TN06010108030_0210	Splatter Creek	3.6	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Livestock in Stream
	TN06010108030_0220	Carson Creek	17.9	Nitrate/Loss of biological integrity due to siltation/Escherichia coli	Pasture Grazing Livestock in Stream
	TN06010108030_0300	Keebler Branch	7.4	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108030_2000	Big Limestone Creek	8.8	Phosphorus/Nitrate/Loss of biological integrity due to siltation/Escherichia coli	Pasture Grazing
0501	TN06010108005_0710	Shelton Branch	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Channelization
	TN06010108010_0300	College Creek	9.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Land Development
	TN06010108010_0400	Moon Creek	8.7	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_0500	Pudding Creek	5.5	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_0750	Rheatown Creek	6.7	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Land Development

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0501, cont.	TN06010108010_0800	Hice Creek	2.1	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108010_1000* & _2000	Nolichucky River	12.0	Loss of biological integrity due to siltation	Agriculture/Source in Other State
0502	TN06010108088_0200	Alexander Creek	2.8	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
0503	TN06010108456_0200	Dry Creek	3.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Resource Extraction
0504	TN06010108010_0200	Holley Creek	8.5	Loss of biological integrity due to siltation	Land Development Discharges from MS4 area
	TN06010108010_1000*	Nolichucky River	3.9	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108010_3800	Wolf Branch	1.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Nonirrigated Crop Production
	TN06010108102_0100	Unnamed Trib To Richland Creek	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108102_0200	Simpson Creek	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing

*TN06010108010_1000 extends into HUC-12 subwatersheds 0501 and 0504

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0504, cont.	TN06010108102_0300	Tipton Creek	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108102_0400	East Fork Richland Creek	5.0	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108102_2000	Richland Creek	6.1	Nutrients/Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing Discharges from MS4 area
	TN06010108DCROCKETT _1000	Davy Crockett Reservoir	383 ac	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108DCTRIBS_ 0100	Mutton Creek	1.7	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108DCTRIBS_ 0200	Johnson Creek	1.4.	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108DCTRIBS_ 0600	Flag Branch	5.8	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Channelization
	TN06010108DCTRIBS_ 0500	Mud Creek	21.4	Loss of biological integrity due to siltation	Pasture Grazing Land Development
0505	TN06010108005_0310	Privet Branch	1.4	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0505, cont.	TN06010108005_0500	Gregg Branch	2.7	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108005_0800	Kyker Branch	2.5	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108005_1000*	Nolichucky River	4.7	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108005_2000	Nolichucky River	6.6	Loss of biological integrity due to siltation/Escherichia coli	Agriculture/Source in Other State
	TN06010108005_3000	Nolichucky River	6.4	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108033_0100	Buffalo Creek	3.0	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
0506	TN06010108009_0300	Cedar Creek	5.4	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108009_1000	Cove Creek	29.7	Loss of biological integrity due to siltation	Pasture Grazing
0601	TN06010108001_0200	Turkey Creek	5.8	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108001_1000	Nolichucky River	4.0	Loss of biological integrity due to siltation/Escherichia coli	Agriculture/Source in Other State
	TN06010108001_3000	Nolichucky River	9.0	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108005_1000*	Nolichucky River	4.7	Loss of biological integrity due to siltation	Agriculture/Source in Other State
	TN06010108005_1121**	Rader Branch	2.0	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing

*TN06010108005_1000 extends into HUC-12 subwatersheds 0505 and 0601 **Hand-delineated, not in NHD

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0603	TN06010108042_0100	Hale Branch	7.1	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108042_0110	Slop Creek	1.7	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108042_0612	Coldspring Branch	1.1	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
0604	TN06010108001_0110	Robinson Creek	3.4	Loss of biological integrity due to siltation	Pasture Grazing
0605	TN06010108043_0200	Crider Creek	6.2	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108043_0300	Sartain Creek	4.4	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108043_0310	Carter Branch	3.5	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing Livestock in Stream
	TN06010108043_0400	Cedar Creek	7.5	Loss of biological integrity due to siltation	Pasture Grazing
0701	TN06010108035_1900	Clear Creek	19.9	Loss of biological integrity due to siltation	Pasture Grazing
	TN06010108035_2300	Horse Fork	1.6	Other Habitat Alterations	Pasture Grazing

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0701, cont.	TN06010108035_2310	Union Temple Creek	23.9	Loss of biological integrity due to siltation/Other Habitat Alterations	Pasture Grazing
	TN06010108035_2320	Davis Creek	2.8	Loss of biological integrity due to siltation/Other Habitat Alterations	Pasture Grazing
	TN06010108035_9000	Lick Creek	7.7	Nutrients/Loss of biological integrity due to siltation/Escherichia coli	Pasture Grazing
0702	TN06010108035_0700	Lick Branch	1.2	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108035_0900	Puncheon Camp Creek	11.5	Nutrients/Loss of biological integrity due to siltation/Escherichia coli	Agriculture
	TN06010108035_1110	Babb Creek	4.6	Other Habitat Alterations	Pasture Grazing
	TN06010108035_1400	Gardiner Creek	5.4	Other Habitat Alterations	Pasture Grazing
	TN06010108035_1410	Wattenbarger Creek	5.3	Other Habitat Alterations	Pasture Grazing
	TN06010108035_2400	Hoodley Branch	5.3	Other Habitat Alterations	Pasture Grazing
	TN06010108035_5000*, _6000 & _7000	Lick Creek	30.3	Nutrients/Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing
0703	TN06010108035_2521	Possum Creek	7.5	Other Habitat Alterations	Pasture Grazing

*TN06010108035_5000 extends into HUC-12 subwatersheds 0702 and 0705

Table 2 (Cont.) 2006 303(d) *List* - Stream Impairment Due to Siltation/Habitat Alteration in the Nolichucky River Watershed

HUC-12 Subwatershed Boundary (06010108__)	Waterbody ID	Impacted Waterbody	Miles/ Acres Impaired	Cause	Pollutant Source
0705	TN06010108035_0200	Potter Creek	15.3	Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing
	TN06010108035_0400	Mud Creek	4.4	Habitat loss due to alteration in stream-side or littoral vegetative cover	Pasture Grazing
	TN06010108035_1000	Lick Creek	3.9	Nutrients/Loss of biological integrity due to siltation Other Habitat Alterations Escherichia coli	Pasture Grazing
	TN06010108035_2810	Pond Creek	2.2	Other Habitat Alterations	Pasture Grazing
	TN06010108035_2900	Fox Branch	1.5	Other Habitat Alterations	Pasture Grazing
	TN06010108035_3000	Lick Creek	7.4	Nutrients/Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing
	TN06010108035_5000*	Lick Creek	5.8	Nutrients/Loss of biological integrity due to siltation/Habitat loss due to alteration in stream-side or littoral vegetative cover/Escherichia coli	Pasture Grazing

*TN06010108035_5000 extends into HUC-12 subwatersheds 0702 and 0705

Figure 4 Waterbodies Impaired Due to Siltation/Habitat Alteration (Documented on the 2006 303(d) *List*) - Western HUC-12s

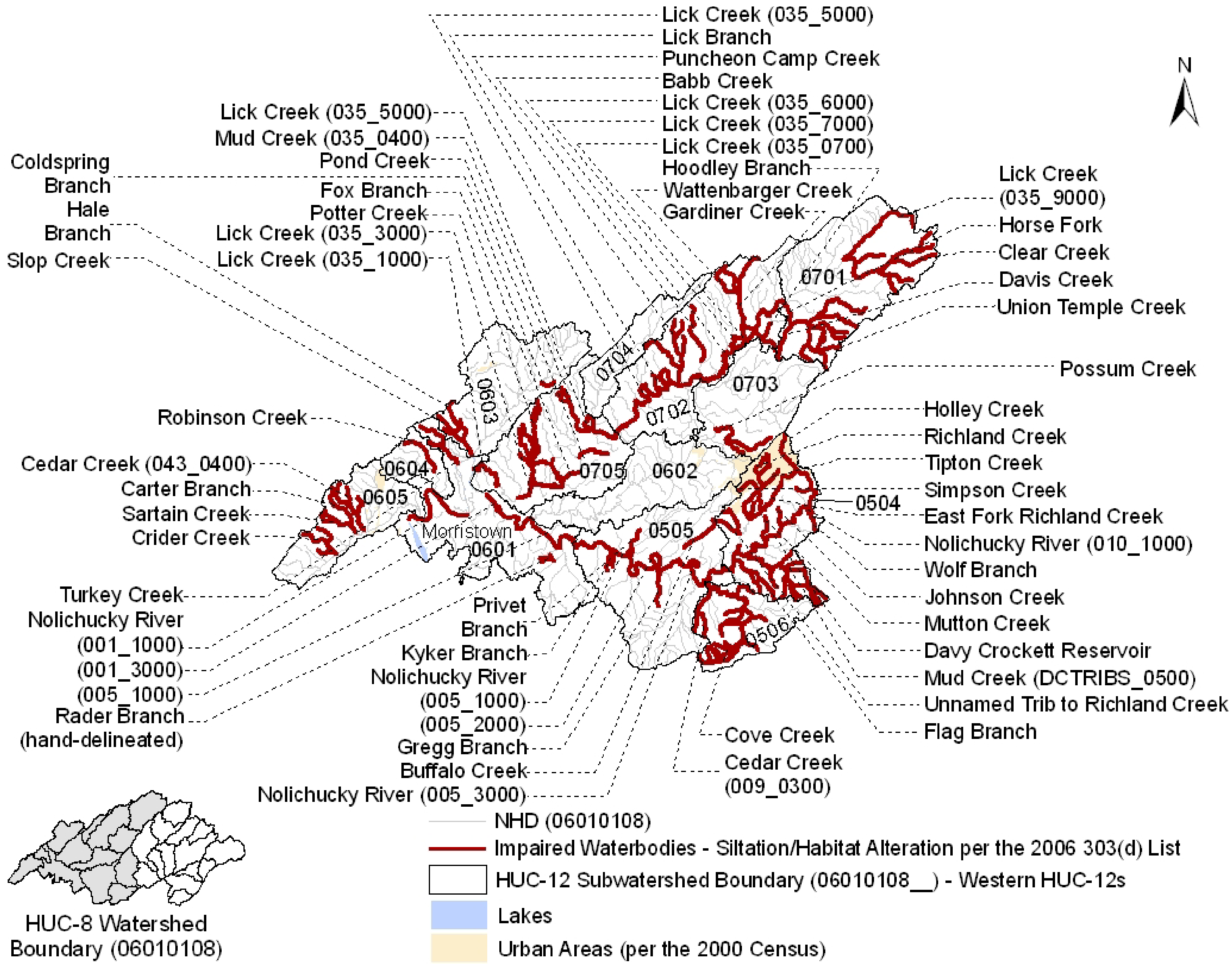
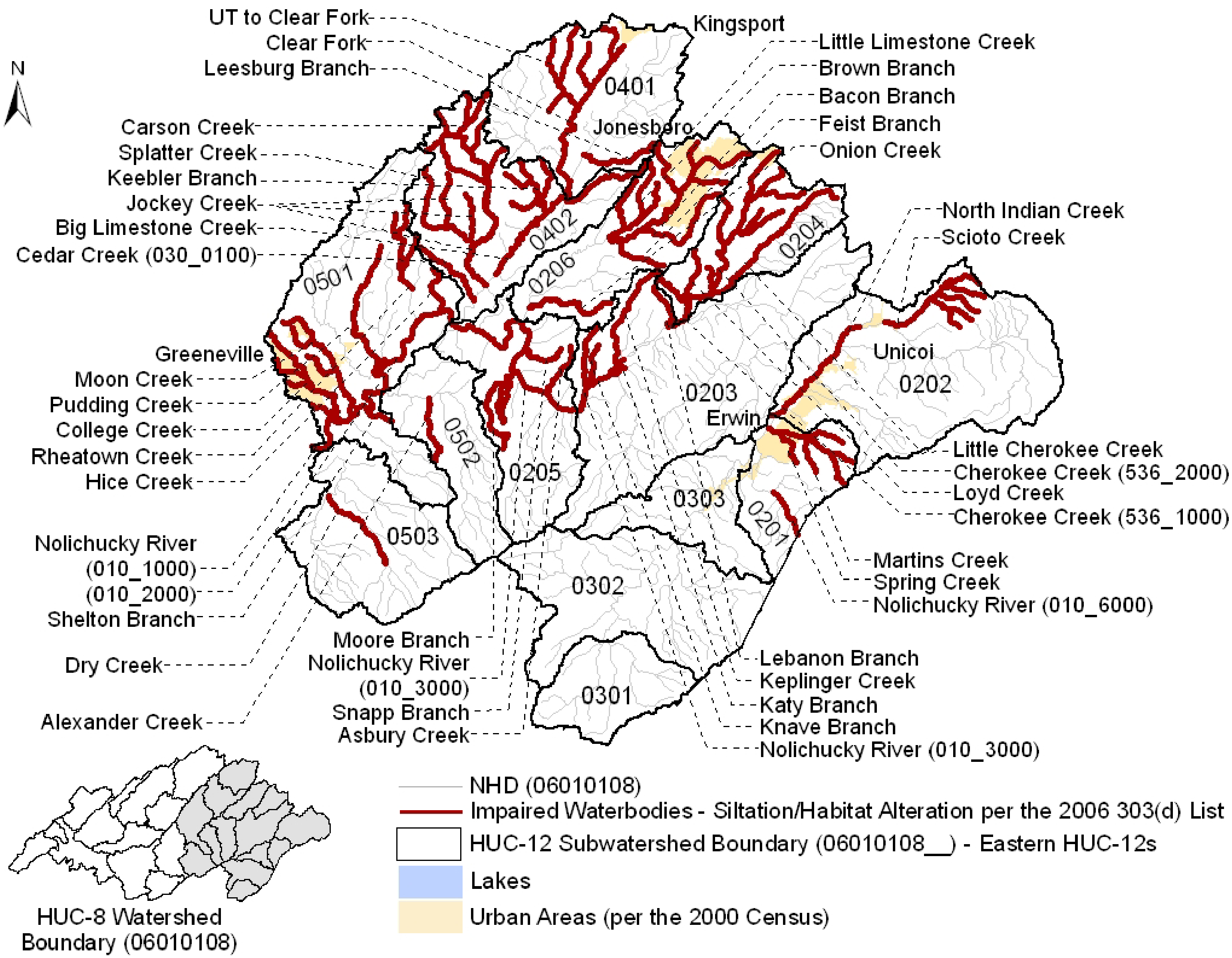


Figure 5 Waterbodies Impaired Due to Siltation/Habitat Alteration (Documented on the *2006 303(d) List*) - Eastern HUC-12s



A description of the stream assessment process in Tennessee can be found in *2006 305(b) Report, The Status of Water Quality in Tennessee* (TDEC, 2006a). This document states that "the most satisfactory method for identification of impairment due to silt has been biological surveys that include habitat assessments." With respect to biological integrity and the fish and aquatic life use classification, the document further states that "biological surveys using macroinvertebrates as the indicator organisms are the preferred method for assessing use support." The waterbody segments listed in Table 2 were assessed as impaired based primarily on biological surveys. The results of these assessment surveys are summarized in Table 3. The assessment information presented is excerpted from the Assessment Database (ADB) and is referenced to the waterbody IDs in Table 2. ADB information may be accessed at:

http://gwidc.memphis.edu/website/dwpc/

An example of a typical stream assessment (Clear Creek at RM 1.0 and at RM 1.3) is shown in Appendix A.

Siltation is the process by which sediments are transported by moving water and deposited on the bottom of stream, river, and lakebeds. Sediment is created by the weathering of host rock and delivered to stream channels through various erosional processes, including sheetwash, gully and rill erosion, wind, landslides, dry gravel, and human excavation. In addition, sediments are often produced as a result of stream channel and bank erosion and channel disturbance. Movement of eroded sediments downslope from their points of origin into stream channels and through stream systems is influenced by multiple interacting factors (USEPA, 1999).

Siltation (sedimentation) is the most frequently cited cause of waterbody impairment in Tennessee, impacting over 5,800 miles of streams and rivers (TDEC, 2006a). Unlike many chemical pollutants, sediments are typically present in waterbodies in natural or background amounts and are essential to normal ecological function. Excessive sediment loading, however, is a major ecosystem stressor that can adversely impact biota, either directly or through changes to physical habitat.

Excessive sediment loading has a number of adverse effects on Fish & Aquatic Life in surface waters. As stated in excerpts from *Framework For Developing Suspended And Bedded Sediments (SABS) Water Quality Criteria* (USEPA, 2006):

> Excessive suspended sediment in aquatic systems decrease light penetration, directly impacting productivity that is especially important in estuarine and marine habitats, where trophic interrelationships tend to be more complex and marginal when compared to freshwater aquatic systems. Decreased water clarity impairs visibility and associated behaviors such as prey capture and predator avoidance, recognition of reproductive cues, and other behaviors that alter reproduction and survival. At very high levels, suspended sediments can cause physical abrasion and clogging of filtration and respiratory organs.

> In flowing waters, bedded sediments are likely to have a more significant impact on habitat and biota than suspended sediments; while most organisms can tolerate episodic occurrences of increased levels of suspended sediments, impacts can become chronic once the sediment is settled. When sediments are deposited or shift longitudinally along the streambed, infaunal or epibenthic organisms and demersal eggs are vulnerable to smothering and entrapment. In smaller amounts, excess fine sediments can fill in gaps between larger substrate particles, embedding the larger particles, and eliminating interstitial spaces that could otherwise be used as habitat for reproduction, feeding, and cover for invertebrates and fish. A noteworthy example of effects of bedded sediments in streams and rivers is the loss of spawning habitat for salmonid fishes due to increased embeddedness. Increased sedimentation can limit the amount of oxygen in the spawning beds, which can reduce hatching success, trap the fry in the sediment after hatching, or reduce the area of habitat suitable for development.

Historically, waterbodies in Tennessee have been assessed as not fully supporting designated uses due to siltation when the impairment was determined to be the result of excess loading of the inorganic sediment produced by erosional processes. In cases where impairment was determined to be caused by excess loading of the primarily organic particulate material found in sewage treatment plant (STP) effluent, the cause of pollution was listed as total suspended solids (TSS) or organic enrichment. In consideration of this practice, this document presents the details of TMDL development for waterbodies in the Nolichucky River Watershed listed as impaired due to siltation (excess inorganic sediment produced by erosional processes) and/or appropriate cases of habitat alteration. The TSS in STP effluent is considered to be a distinctly different pollutant and, therefore, is excluded in sediment loading calculations.

Table 3 Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0201	TN06010108010_1900	Martins Creek (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.1 (Snap Mill Road). 7 EPT genera, 4 intolerant, 15 total genera. Habitat score = 127. Failed biorecon criteria. Odom Creek also assessed as similar to Martins.
	TN06010108010_1910	Spring Creek (from Martins Creek to headwaters. (In Banner Hill))	2000 Lab biorecon at mile 0.1 (d/s Hwy 19w). Zero EPT genera, 1 intolerant, 7 total genera. Habitat score = 127. Failed biorecon criteria.
	TN06010108010_6000	Nolichucky River (from ecoregion break near Chestoa to North Carolina stateline)	2000 Lab RBPIII survey at mile 98.5 (u/s of RR Bridge). 8 EPT genera, 26 total genera. Habitat score = 148. Site failed biocriteria. TDEC chemical station also at mile 98.5 (RR Bridge). NC has some stations across stateline.
0202	TN06010108029_0300	Scioto Creek (from North Indian Creek to headwaters)	2000 LAB biorecon at mile 0.1 (Highway 107). 5 EPT genera, 2 intolerant, 15 total genera. Habitat score = 117. Failed biorecon criteria.
	TN06010108029_1000	North Indian Creek (from Nolichucky River to 66e ecoregion break near Unicoi)	2000 LAB biorecons at mile 0.1 (u/s Highway 19W) and at mile 3.1 (near fish hatchery). 5 EPT genera, 1 intolerant, 15 total, habitat score = 138 at lower site. 5 EPT genera, 2 intolerant, 14 total, habitat score = 135 at upper site. Failed criteria.
0203	TN06010108010_1200	Knave Branch (from Nolichucky River to headwaters)	2000 LAB biorecon at mile 0.5 (u/s Snapp Bridge Road). 2 EPT genera, zero intolerant, 18 total genera. Habitat score = 99. Failed biorecon criteria.
	TN06010108010_1300	Keplinger Creek (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.5 (Clarlie Dillow Road). 2 EPT genera, 2 intolerant, 23 total genera. Habitat score = 92. Failed biorecon criteria.
	TN06010108010_1400	Lebanon Branch (from Nolichucky River to headwaters)	2000 Lab Biorecon at mile 0.1 (u/s Taylor Bridge Road). 4 EPT genera, 2 intolerant, 17 total taxa. Habitat score = 106. Failed biorecon criteria.

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0203, cont.	TN06010108010_3000*	Nolichucky River (from Big Limestone Creek to the confluence of Clark Creek)	2000 Lab RBPIII survey at mile 69.0 (u/s of Big Limestone Creek). 3 EPT genera, 30 total genera. Habitat score = 135. Site failed biocriteria.
	TN06010108010_3100	Katy Branch (from Nolichucky River to Highway 107	2000 Lab biorecon at mile 1.0 (d/s Jackson Branch Road). 4 EPT genera, 4 intolerant, 17 total genera. Habitat score = 129. Failed biorecon criteria.
0204	TN06010108536_0100	Loyd Creek (from Cherokee Creek to headwaters)	2000 Lab biorecon at mile 0.5 (u/s Treadway Road). 5 EPT genera, 2 intolerant, 13 total genera. Habitat score = 109. Failed biorecon criteria.
	TN06010108536_0200	Little Cherokee Creek (from Cherokee Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Hwy 81). 4 EPT genera, 1 intolerant, 17 total genera. Habitat score = 74. Failed biorecon criteria.
	TN06010108536_1000	Cherokee Creek (from Nolichucky River to Little Cherokee Creek)	2000 Lab biorecon at mile 1.0 (Taylors Bridge Road). 4 EPT genera, 1 intolerant, 15 total genera. Habitat score = 122. Failed biorecon criteria. 1998 TWRA biological survey at Taylors Bridge Road. 9 ETP genera, 29 total genera.
	TN06010108536_2000	Cherokee Creek (from Little Cherokee Creek to headwaters)	2000 Lab biorecon at mile 2.5 (Highway 81). 7 EPT genera, 0 intolerant, 12 total genera. Habitat score = 142. Failed biorecon criteria.
0205	TN06010108010_0900	Snapp Branch (from Nolichucky River to headwaters)	2000 LAB biorecon at mile 0.2 (u/s Snapp Bridge Road). 4 EPT genera, 1 intolerant, 17 total genera. Habitat score = 106. Failed biorecon criteria.
	TN06010108010_1100	Asbury Creek (from Nolichucky River to headwaters)	2000 LAB biorecon at mile 0.1 (u/s Frank Stanton Road). 4 EPT genera, 2 intolerant, 13 total genera. Habitat score = 86. Failed biorecon criteria.

*TN06010108010_3000 extends into HUC-12 subwatersheds 0203 and 0205

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0205, cont.	TN06010108010_3000*	Nolichucky River (from Big Limestone Creek to the confluence of Clark Creek)	2000 Lab RBPIII survey at mile 69.0 (u/s of Big Limestone Creek). 3 EPT genera, 30 total genera. Habitat score = 135. Site failed biocriteria.
	TN06010108010_3600	Moore Branch (from Nolichucky River to headwaters)	2000 Lab observed at mile 0.1 (Highway 107) on 09/19/2000. Dry. Reconned for ecoregion project, but stream condition may have changed since then.
0206	TN06010108510_0100	Brown Branch (from Little Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Telford Road). 4 EPT genera, 1 intolerant, 14 total genera. Habitat score = 86. Failed biorecon criteria.
	TN06010108510_0200	Bacon Branch (from Little Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.2 (u/s SR 34). 3 EPT genera, 0 intolerant, 26 total genera. Habitat score = 89. Failed biorecon criteria.
	TN06010108510_0300	Feist Branch (from Little Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.4 (d/s Miller Road). 3 EPT genera, 0 intolerant, 14 total genera. Habitat score = 82. Failed biorecon criteria.
	TN06010108510_0500	Onion Creek (from Little Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.2 (Gravel Hill Road). 7 EPT genera, 1 intolerant, 22 total genera. Habitat score = 131. Failed biorecon criteria.
	TN06010108510_2000	Little Limestone Creek (from confluence of Brown Creek near Telford to headwaters)	2000 Lab biorecon at mile 7.7 (Hwy 81). 1 EPT genera, 0 intolerant, 15 total genera. Habitat score = 91. Failed biorecon criteria. TDEC chemical station at mile 6.8 (near Teleford). Fecal coliform aver of 15 samples > 2,000. NO2 also elevated.
0401	TN06010108030_0400	Clear Fork (from Big Limestone Creek to headwaters)	2000 Lab biorecon at mile 1.4 (Bowmantown Road). 1 EPT genera, 1 intolerant, 20 total genera. Habitat score = 113. Failed biorecon criteria.

*TN06010108010_3000 extends into HUC-12 subwatersheds 0203 and 0205

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0401, cont.	TN06010108030_0420	Unnamed Trib To Clear Fork (from Clear Fork to headwaters)	2000 Lab biorecon at mile 0.3 (d/s Hwy 81). 4 EPT genera, 2 intolerant, 24 total genera. Habitat score = 131. Failed biorecon criteria.
	TN06010108030_0431	Leesburg Branch (from Muddy Fork to headwaters)	2000 Lab biorecon at mile 1.0 (u/s mouth, off Muddy Fork Road). 6 EPT genera, 1 intolerant, 19 total genera. Habitat score = 72. Failed biorecon criteria.
0402	TN06010108030_0100	Cedar Creek (from Big Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.3 (Remine Road). 4 EPT genera, 2 intolerant, 22 total genera. Habitat score = 94. Passed biorecon criteria.
	TN06010108030_0200	Jockey Creek (from Big Limestone Creek to headwaters)	2000 Lab RBPIII at mile 0.1 (u/s Opre Arnold Road). 5 EPT genera, 21 total genera. Habitat score = 140. Failed biocriteria. TDEC chemical station at 3.2.
	TN06010108030_0210	Splatter Creek (from Jockey Creek to headwaters)	2000 Lab biorecon at mile 0.5 (Splatter Creek Road). 2 EPT genera, 0 intolerant, 22 total genera. Habitat score = 40. Failed biorecon criteria.
	TN06010108030_0220	Carson Creek (from Big Limestone Creek to headwaters)	2000 Lab RBPIII at mile 0.1 (Clear Springs Road). 5 EPT genera, 27 total genera. Habitat score = 91. Failed biocriteria. 319 project station at mile 1.5. Fecal coliform very elevated and NO2 + NO3 and suspended sediment levels elevated.
	TN06010108030_0300	Keebler Branch (from Big Limestone Creek to headwaters)	2000 Lab biorecon at mile 0.1 (Kyker Road). 5 EPT genera, 2 intolerant, 21 total genera. Habitat score = 102. Failed biorecon criteria.
	TN06010108030_2000	Big Limestone Creek (from unnamed trib near Limestone to headwaters)	2000 Lab RBPIII at mile 4.0 (d/s Highway 11E). 6 EPT genera, 32 total. Habitat = 110. Failed biocriteria. 319 project station at mile 7.7. 1995 LAB biological survey at Kyker Road. 9 EPT genera, 29 total genera. USGS station near Limestone, TN.
0501	TN06010108005_0710	Shelton Branch (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.2 (u/s Poplar Springs Road). 3 EPT genera, zero intolerant, 18 total genera. Habitat score = 51. Failed biorecon criteria.

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0501, cont.	TN06010108010_0300	College Creek (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.3 (Browns Bridge Road). 5 EPT genera, 0 intolerant, 18 total genera. Habitat score = 113. Failed biorecon criteria.
	TN06010108010_0400	Moon Creek (from Nolichucky River to headwaters)	2000 Lab biorecons at mile 0.9 (Hwy 107) and at mile 2.8 (Hwy 11E). 2 EPT genera, 1 intolerant, 22 total genera, habitat = 81. 4 EPT genera, 0 intolerant, 16 total genera. habitat = 95. Both sites failed biorecon criteria.
	TN06010108010_0500	Pudding Creek (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.2 (Johnson City Road). 5 EPT genera, 3 intolerant, 20 total genera. Habitat score = 66. Failed biorecon criteria.
	TN06010108010_0750	Rheatown Creek (from Highway 11E to headwaters)	2000 Lab biorecon at mile 1.1 (Hwy 11E). 7 EPT genera, 3 intolerant, 17 total, habitat = 75 at mile 1.1. Failed biorecon criteria at upstream site.
	TN06010108010_0800	Hice Creek (from Nolichucky River to headwaters)	2000 LAB biorecon at mile 0.2 (u/s Johnson Road). 3 EPT genera, 2 intolerant, 20 total genera. Habitat score = 97. Failed biorecon criteria.
	TN06010108010_1000*	Nolichucky River (from Davy Crockett Reservoir to confluence of Horse Creek)	2000 Lab RBPIII survey at mile 60.5 (d/s Hwy 107). 1 EPT genera, 26 total. Habitat score = 135. Site failed biocriteria. 1997 TVA biological survey also at mile 60.5 (Highway 107 bridge near Greeneville). 7 EPT families, 25 total families.
	TN06010108010_2000	Nolichucky River (from confluence of Horse Creek to confluence of Big Limestone Creek)	2000 Lab RBPIII surveys at mile 63.0 (d/s Sinking Cr) & at mile 68.0 (d/s Big Limestone Cr). 7 EPT genera, 18 total, habitat = 140 at mile 63.0. 3 EPT genera, 29 total, habitat= 132 at 68.0. Sites failed biocriteria. TDEC chem. station at Hwy 351
0502	TN06010108088_0200	Alexander Creek (from Horse Creek to headwaters. (Near Hwy 351)	2000 Lab biorecon at mile 0.1 (u/s Hwy 351). 3 EPT genera, 2 intolerant, 20 total genera. Habitat score = 78. Failed biorecon criteria.

*TN06010108010_1000 extends into HUC-12 subwatersheds 0501 and 0504

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0503	TN06010108456_0200	Dry Creek (from Camp Creek to Mission Road	TDEC (Mining Section) survey near mining facility. Stream alteration.
0504	TN06010108010_0200	Holley Creek (from Nolichucky River to headwaters)	2000 Lab biorecons at mile 0.5 (d/s Buckingham Rd) and at mile 1.7 (Shiloh Rd). 6 EPT genera, 0 intolerant, 22 total, habitat=129 at mile 0.5. 4 EPT genera, 0 intolerant, 13 total, habitat = 153 at mile 1.7. Failed biorecon criteria at both sites.
	TN06010108010_1000*	Nolichucky River (from Davy Crockett Reservoir to confluence of Horse Creek)	2000 Lab RBPIII survey at mile 60.5 (d/s Hwy 107). 1 EPT genera, 26 total. Habitat score = 135. Site failed biocriteria. 1997 TVA biological survey also at mile 60.5 (Highway 107 bridge near Greeneville). 7 EPT families, 25 total families.
	TN06010108010_3800	Wolf Branch (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.5 (u/s Fannin Road). 2 EPT genera, 1 intolerant, 15 total genera. Habitat score = 62. Failed biorecon criteria.
	TN06010108102_0100	Unnamed Trib To Richland Creek (from Richland Creek to headwaters	2000 Lab biorecon at mile 0.4 (off Meadow Creek Road). 3 EPT genera, zero intolerant, 13 total genera. Habitat score = 101. Failed biorecon criteria. The trib to the west was dry.
	TN06010108102_0200	Simpson Creek (from Richland Creek to headwaters	2000 Lab biorecon at mile 0.1 (off East Allen Bridge Road). 2 EPT genera, zero intolerant, 17 total genera. Habitat score = 87. Failed biorecon criteria.
	TN06010108102_0300	Tipton Creek (from Richland Creek to headwaters	2000 Lab biorecon at mile 0.1 (u/s Highway 350). Zero EPT genera, zero intolerant, 15 total genera. Habitat score = 60. Failed biorecon criteria.
	TN06010108102_0400	East Fork Richland Creek (from Richland Creek to headwaters	2000 Lab biorecon at mile 0.1 (off Allen Bridge Road). 4 EPT genera, 2 intolerant, 26 total genera. Habitat score = 101. Failed biorecon criteria.

*TN06010108010_1000 extends into HUC-12 subwatersheds 0501 and 0504

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0504, cont.	TN06010108102_2000	Richland Creek (from confluence of Right Fork Richland Creek to headwaters)	2000 Lab RBPIII at mile 3.5 (u/s Old Asheville Highway) and 4.2 (East McKee Road). 3 EPT, 19 total at both. Both sites failed biocriteria. TDEC chemical station at mile 6.0 (McKee Street Bridge). Fecal coliform and nitrate-nitrite elevated.
	TN06010108DCROCKETT _1000	Davy Crockett Reservoir (Davy Crockett Lake on the Nolichucky River)	2000 Lab RBPIII surveys at mile 47.3 (d/s of Richland Cr.) & at 54.5 (d/s Camp Cr). 4 EPT genera, 39 total, habitat = 130 at 47.3. 7 EPT genera, 28 total, habitat= 112 at 54.5. Much of Lake capacity lost due to siltation- dredging being considered.
	TN06010108DCTRIBS _0100	Mutton Creek (from Davy Crockett Lake to headwaters)	2000 Lab biorecon at mile 0.5 (d/s Roberts Road). Zero EPT genera, zero intolerant, 18 total genera. Habitat score = 87. Failed biorecon criteria.
	TN06010108DCTRIBS _0200	Johnson Creek (from Davy Crockett Lake to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Gray Lane). 8 EPT genera, 5 intolerant, 27 total genera. Habitat score = 137. Failed biorecon criteria.
	TN06010108DCTRIBS _0500	Mud Creek (from Davy Crockett Lake to headwaters)	2000 Lab biorecon at mile 0.5 (Old Asheville Highway). 6 EPT genera, 3 intolerant, 29 total genera. Habitat score = 131. Failed biorecon criteria.
	TN06010108DCTRIBS _0600	Flag Branch (from Davy Crockett Lake to headwaters)	2000 Lab biorecon at mile 0.7 (Flag Branch Road). 3 EPT genera, zero intolerant, 26 total genera. Habitat score = 72. Failed biorecon criteria.
0505	TN06010108005_0310	Privet Branch (from Furness Branch to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Poplar Springs Road). 4 EPT genera, 2 intolerant, 17 total genera. Habitat score = 83. Failed biorecon criteria.
	TN06010108005_0500	Gregg Branch (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.6 (d/s Gregg Mill Road). 4 EPT genera, 3 intolerant, 21 total genera. Habitat score = 121. Failed biorecon criteria.
	TN06010108005_0800	Kyker Branch (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.1 (off Poplar Springs Road). 6 EPT genera, 3 intolerant, 27 total genera. Habitat score = 118. Failed biorecon criteria.

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0505, cont.	TN06010108005_1000*	Nolichucky River (from Little Chucky Creek to ecoregion break near Evans Island)	Assessment based on stations upstream and just downstream of this segment.
	TN06010108005_2000	Nolichucky River (from ecoregion break just u/s of Evans Island to Pigeon Creek)	2000 Lab RBPIII survey at mile 38.5 (d/s of Pigeon Creek, off Love-Waddell Road). 5 EPT genera, 32 total genera. Habitat score = 132. Site failed biocriteria.
	TN06010108005_3000	Nolichucky River (from confluence of Pigeon Creek to Nolichucky Dam)	2000 Lab RBPIII surveys @mile 41.8 (d/s Meadow Cr) & @44.7 (d/s Crocket Dam). 2 EPT genera, 28 total, habitat = 132 @mile 41.8. 3 EPT genera, 34 total, habitat = 152 @mile 44.7. Sites failed biocriteria. Chemical samples @mile 41.8.
	TN06010108033_0100	Buffalo Creek (from Pigeon Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Poplar Springs Road). 0 EPT genera, 0 intolerant, 18 total genera. Habitat score = 60. Failed biorecon criteria. DO = 4.82.
0506	TN06010108009_0300	Cedar Creek (from Cove Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Fillers Mill Road). 7 EPT genera, 4 intolerant, 19 total genera. Habitat score = 123. Failed biorecon criteria.
	TN06010108009_1000	Cove Creek (from Nolichucky River to headwaters)	2000 Lab biorecons at mile 1.0 (Fillers Mill Rd) and at mile 3.0 (Cove Creek Rd) 5 EPT genera, 2 intolerant, 28 total, habitat = 142 at mile 1.0. 3 EPT genera, 1 intolerant, 16 total, habitat = 108. Failed biorecon criteria at both sites.
0601	TN06010108001_0200	Turkey Creek (from Nolichucky River to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Bent Ridge Road). 3 EPT genera, 2 intolerant, 14 total genera. Habitat score = 109. Failed biorecon criteria for 67f.
	TN06010108001_1000	Nolichucky River (from Douglas embayment to the confluence of Flat Creek)	TDEC chemical station at mile 28.0 (Hwy 340, Hale Br). Fecal coliform and total residue elevated. 2000 Lab RBPIII survey at mile 29.0. (u/s Hale Br). 4 EPT genera, 24 total, habitat = 150. Site failed biocriteria.

*TN06010108005_1000 extends into HUC-12 subwatersheds 0505 and 0601

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0601, cont.	TN06010108001_3000	Nolichucky River (from the confluence of Bent Creek to Little Chucky Creek)	2000 Lab RBPIII surveys at mile 15.5. and 16.5 (u/s & d/s Lick Creek). 4 EPT genera, 29 total, habitat = 133 at mile 15.5. 4 EPT, 30 total, habitat = 125 at mile 16.5. Sites failed biocriteria. Chemical station at mile 20.8 (Knob Creek Road).
	TN06010108005_1000*	Nolichucky River (from Little Chucky Creek to ecoregion break near Evans Island)	Assessment based on stations upstream and just downstream of this segment.
	TN06010108005_1121**	Rader Branch (from Goodwater Branch to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Goodwater Road). 4 EPT genera, 1 intolerant, 15 total genera. Habitat score = 87. Failed biorecon criteria. (This stream is not indexed in GIS. It is too small to show up in coverage.)
0603	TN06010108042_0100	Hale Branch (from Bent Creek to headwaters)	2000 Lab biorecon at mile 0.4 (u/s Ewing Road). 4 EPT genera, 2 intolerant, 13 total genera. Habitat score = 102. Failed biorecon criteria.
	TN06010108042_0110	Slop Creek (from Hale Branch to headwaters	2000 Lab biorecon at mile 0.4 (u/s Ewing Road). 3 EPT genera, 0 intolerant, 19 total genera. Habitat score = 73. Failed biorecon criteria.
	TN06010108042_0612	Coldspring Branch (from Whitehorn Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Sycamore Drive). 1 EPT genera, 1 intolerant, 21 total genera. Habitat score = 59. Failed biorecon criteria.
0604	TN06010108001_0110	Robinson Creek ((called East Fork Flat Creek on Gazetteer) from Flat Creek to headwaters)	2000 Lab biorecon at mile 0.5 (u/s Feltner Driveway). 7 EPT genera, 4 intolerant, 9 total genera. Habitat score = 114. Failed biorecon criteria.
0605	TN06010108043_0200	Crider Creek (from Long Creek to headwaters)	2000 Lab biorecon at mile 0.2 (u/s Carmichael Road). 1 EPT genera, 0 intolerant, 9 total genera. Habitat score = 45. Failed biorecon criteria.

*TN06010108005_1000 extends into HUC-12 subwatersheds 0505 and 0601 **Hand-delineated, not in NHD

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0605, cont.	TN06010108043_0300	Sartain Creek (from Long Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Bell Road). 0 EPT genera, 0 intolerant, 8 total genera. Habitat score = 85. Failed biorecon criteria. DO = 4.62.
	TN06010108043_0310	Carter Branch (from Sartain Branch to headwaters)	2000 Lab biorecon at mile 0.4 (d/s Bell Road). 1 EPT genera, 1 intolerant, 22 total genera. Habitat score = 74. Failed biorecon criteria.
	TN06010108043_0400	Cedar Creek (from Long Creek to headwaters)	2000 Lab biorecon at mile 1.0 (u/s John Hardy Road). 3 EPT genera, 3 intolerant, 21 total genera. Habitat score = 135. Failed biorecon criteria.
0701	TN06010108035_1900	Clear Creek (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.1 (Woolsy Road). 5 EPT genera, 0 intolerant, 13 total genera. Habitat score = 115. Failed biorecon criteria fro 67f.
	TN06010108035_2300	Horse Fork (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.5 (Lost Mountain Pike). 3 EPT genera, 0 intolerant, 17 total genera. Habitat score = 85. Failed biorecon criteria.
	TN06010108035_2310	Union Temple Creek (from Horse Fork to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Judy Dottie Road). 6 EPT genera, 3 intolerant, 20 total genera. Habitat score = 87. Three tribs (Newmansville, Crabtree, and Bright) also assessed - each impacted.
	TN06010108035_2320	Davis Creek (from Horse Fork to headwaters)	2000 Lab biorecon at mile 0.3 (Davis Valley Road). 1 EPT genera, 1 intolerant, 14 total genera. Habitat score = 59. Failed biorecon criteria.
	TN06010108035_9000	Lick Creek (from Interstate 81 to headwaters)	2000 Lab RBPIII survey at mile 61.0 (u/s Campbell Road). 7 EPT genera, 27 total genera. Habitat score = 117. Site failed biocriteria. Fecal coliform high. Six E. coli observations out of 15 > 1,000.
0702	TN06010108035_0700	Lick Branch (from Lick Creek to headwaters)	2000 Lab biorecons at mile 1.0 (u/s of Wise Carver Road). 2 EPT genera, zero intolerant, 19 total genera. Habitat score = 70. Failed biorecon criteria.

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0702, cont.	TN06010108035_0900	Puncheon Camp Creek (from Lick Creek to headwaters)	2000 Lab RBPIII at mile 0.5 (off Route 70). 3 EPT genera, 30 total genera. Habitat score = 50. Passed biocriteria. Pigeon Creek also assessed. About the same as Puncheon Camp.
	TN06010108035_1110	Babb Creek (from Saylor Creek to headwaters)	2000 Lab biorecon at mile 0.7 (u/s Flatwoods Road). 2 EPT genera, 0 intolerant, 15 total genera. Habitat score = 80. Failed biorecon criteria.
	TN06010108035_1400	Gardiner Creek ((called Gardner on topo maps) from Lick Creek to headwaters)	2000 Lab biorecons at mile 0.2 (Chrumley Rd) and at mile 2.5 (Van Hill Rd). 2 EPT genera, 0 intolerant, 16 total, habitat score = 59 at mile 0.2. 3 EPT genera, 2 intolerant, 18 total, habitat score = 91 at mile 2.5. Failed biorecon crit. at u/s.
	TN06010108035_1410	Wattenbarger Creek (from Gardiner Creek to headwaters)	2000 Lab biorecons at mile 0.1 (Horten Highway). 4 EPT genera, 2 intolerant, 24 total genera. Habitat score = 104. Failed biorecon criteria.
	TN06010108035_2400	Hoodley Branch (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.7 (u/s Wesley Chapel Road). 4 EPT genera, 0 intolerant, 20 total genera. Habitat score = 77. Failed biorecon criteria.
	TN06010108035_5000*	Lick Creek (from confluence of Mud Creek to State Highway 70)	2000 Lab RBPIII survey at mile 24.2 (u/s Old Highway 34). 3 EPT genera, 22 total genera. Habitat score = 108. Site failed biocriteria. TDEC chemical station at mile 20.5 (Pottertown Rd.) Fecal coliform and total residue elevated.
	TN06010108035_6000	Lick Creek (from State Highway 70 to confluence of Grassy Creek	2000 Lab RBPIII surveys at mile 33.6 (u/s Old Hwy 70) and at mile 40.8 (off John Graham Rd). 5 EPT genera, 24 total, habitat = 89 at mile 33.6. 4 EPT genera, 24 total, habitat=90 at mile 40.8. Both sites failed biocriteria. Fecal coliform elevated.
	TN06010108035_7000	Lick Creek (from confluence of Grassy Creek to confluence of Horse Fork)	2000 Lab RBPIII survey at mile 45.2 (u/s Wesley Chapel Road). 2 EPT genera, 28 total genera. Habitat score= 96. Site failed biocriteria. TDEC chemical station at Crumley Rd. Fecal coliform and total residue elevated.

*TN06010108035_5000 extends into HUC-12 subwatersheds 0702 and 0705

Table 3 (Cont.) Water Quality Assessment of Waterbodies Impaired Due to Siltation/Habitat Alteration

HUC-12 Subwatershed Boundary	Waterbody ID	Impacted Waterbody	Comments
0703	TN06010108035_2521	Possum Creek (from Gass Creek to headwaters)	2000 Lab biorecon at mile 1.3 (u/s Harmon Road). 2 EPT genera, 1 intolerant, 17 total genera. Habitat score = 84. Failed biorecon criteria. Habitat poor.
0705	TN06010108035_0200	Potter Creek (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.3 (u/s Sapp Road). Zero EPT genera, zero intolerant, 28 total genera. Habitat score = 41. Failed biorecon criteria. Fecals high.
	TN06010108035_0400	Mud Creek (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.3 (u/s Farnsworth Road). 3 EPT genera, 1 intolerant, 18 total genera. Habitat score = 88. Failed biorecon criteria.
	TN06010108035_1000	Lick Creek (from Nolichucky River to State Highway 348)	2000 Lab RBPIII survey at mile 1.0 (u/s Warrensburg Rd). 7 EPT genera, 27 total genera. Habitat score = 105. Site failed biocriteria. TDEC chemical station at mile 1.0 (Cooper Bridge). Fecal coliform and total residue elevated.
	TN06010108035_2810	Pond Creek (from Lick Creek to headwaters)	2000 Lab biorecon at mile 0.1 (u/s Brown Springs Road). 2 EPT genera, zero intolerant, 16 total, Habitat score = 47. Failed biorecon criteria.
	TN06010108035_2900	Fox Branch (from Lick Creek to headwaters)	2000 Lab biorecons at mile 0.2 (u/s of Oakwood Road). 1 EPT genera, 0 intolerant, 8 total genera. Habitat score = 65. Failed biorecon criteria.
	TN06010108035_3000	Lick Creek (from confluence of Black Creek to the confluence of Skipper Creek)	2000 Lab RBPIII survey at mile 6.5 (u/s Smelcer Road). 6 EPT genera, 23 total genera. Habitat score = 91. Site failed biocriteria. TDEC chemical station at mile 11.9 (Bible Chapel Rd.) E. coli still elevated.
	TN06010108035_5000*	Lick Creek (from confluence of Mud Creek to State Highway 70)	2000 Lab RBPIII survey at mile 24.2 (u/s Old Highway 34). 3 EPT genera, 22 total genera. Habitat score = 108. Site failed biocriteria. TDEC chemical station at mile 20.5 (Pottertown Rd.) Fecal coliform and total residue elevated.

*TN06010108035_5000 extends into HUC-12 subwatersheds 0702 and 0705

4.0 TARGET IDENTIFICATION

Several narrative criteria, applicable to siltation/habitat alteration, are established in *Rules of Tennessee Department of Environment and Conservation, Tennessee Water Quality Control Board, Division of Water Pollution Control, Chapter 1200-4-3 General Water Quality Criteria, January, 2004* (TDEC, 2004a):

Applicable to all use classifications (Fish & Aquatic Life shown):

Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size and character that may be detrimental to fish and aquatic life.

Other Pollutants - The waters shall not contain other pollutants that will be detrimental to fish or aquatic life.

Applicable to the Domestic Water Supply, Industrial Water Supply, Fish & Aquatic Life, and Recreation use classifications (Fish & Aquatic Life shown):

Turbidity or Color - There shall be no turbidity or color in such amounts or of such character that will materially affect fish and aquatic life.

Applicable to the Fish & Aquatic Life use classification:

Biological Integrity - The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or adversely affected, except as allowed under 1200-4-3-.06.

Interpretation of this provision for any stream which (a) has at least 80% of the upstream catchment area contained within a single bioregion and (b) is of the appropriate stream order specified for the bioregion, and (c) contains the habitat (riffle or rooted bank) specified for the bioregion, may be made using the most current revision of the Department's Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys and/or other scientifically defensible methods.

Interpretation of this provision for all other streams, plus large rivers, reservoirs, and wetlands, may be made using Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers (EPA/841-B-99-002) and/or other scientifically defensible methods. Effects to biological populations will be measured by comparisons to upstream conditions or to appropriately selected reference sites in the same bioregion if upstream conditions are determined to be degraded.

Habitat - The quality of instream habitat shall provide for the development of a diverse aquatic community that meets regionally based biological integrity goals. The instream habitat within each subecoregion shall be generally similar to that found at reference streams. However, streams shall not be assessed as impacted by habitat loss if it has been demonstrated that the biological integrity goal has been met.

These TMDLs are being established to attain full support of the Fish & Aquatic Life designated use classification. TMDLs established to protect fish and aquatic life will protect all other use classifications for the identified waterbodies from adverse alteration due to sediment loading.

In order for a TMDL to be established, a numeric “target” protective of the uses of the water must be identified to serve as the basis for the TMDL. Where State regulation provides a numeric water quality criteria for the pollutant, the criteria is the basis for the TMDL. Where State regulation does not provide a numeric water quality criteria, as in the case of siltation/habitat alteration, a numeric interpretation of the narrative water quality standard must be determined. For the purpose of these TMDLs, the average annual sediment loading in lbs/acre/yr, from a biologically healthy watershed, located within the same Level IV ecoregion as the impaired watershed, is determined to be the appropriate numeric interpretation of the narrative water quality standard for protection of fish and aquatic life. Biologically healthy watersheds were identified from the State’s ecoregion reference sites. These ecoregion reference sites have similar characteristics and conditions as the majority of streams within that ecoregion. Detailed information regarding Tennessee ecoregion reference sites can be found in *Tennessee Ecoregion Project, 1994-1999* (TDEC, 2000). In general, land use in ecoregion reference watersheds consist of less pasture, cropland, and urban areas and more forested areas compared to the impaired watersheds. The biologically healthy (reference) watersheds are considered the “least impacted” in an ecoregion and, as such, sediment loading from these watersheds may serve as an appropriate target for the TMDL.

Using the methodology described in Appendix B, the Watershed Characterization System (WCS) Sediment Tool was used to calculate the average annual sediment load for each of the biologically healthy (reference) watersheds in Level IV ecoregions 66d, 66e, 66f, 66g, 67f, 67g, 67h, and 67i. The geometric mean of the average annual sediment loads of the reference watersheds in each Level IV ecoregion was selected as the most appropriate target for that ecoregion. Since the impairment of biological integrity due to sediment build-up is generally a long-term process, using an average annual load is considered appropriate. The average annual sediment loads for reference sites and corresponding TMDL target values for Level IV ecoregions 66d, 66e, 66f, 66g, 67f, 67g, 67h, and 67i are summarized in Table 4. Reference site locations are shown in Figure 6.

Table 4 Average Annual Sediment Loads of Level IV Ecoregion Reference Sites

Level 4 Ecoregion	Reference Site	Stream	Drainage Area (acres)	Average Annual Sediment Load [lbs/acre/year]
66d	Eco66d01	Black Branch	757	243.4
	Eco66d03	Laurel Fork Creek	11,164	231.5
	Eco66d05	Doe River	593	26.7
	Eco66d06	Tumbling Creek	644	23.7
	Eco66d07	Little Stony Creek	1,538	228.7
			Geometric Mean (Target Load)	**96.0**
66e	Eco66e04	Gentry Creek	2,699	127.6
	Eco66e09	Clark Creek	5,886	83.5
	Eco66e11	Lower Higgins Creek	2,189	64.1
	Eco66e17	Double Branch	1,878	85.1
	Eco66e18	Gee Creek	2,728	222.7
			Geometric Mean (Target Load)	**105.3**
66f	Eco66f06	Abrams Creek	13,857	128.9
	Eco66f07	Beaverdam Creek	29,262	246.7
	Eco66f08	Stony Creek	2,488	363.3
			Geometric Mean (Target Load)	**226.1**
66g	Eco66g04	Middle Prong Little Pigeon River	12,376	85.3
	Eco66g05	Little River	19,999	58.8
	Eco66g07	Citico Creek	1,556	96.7
	Eco66g09	North River	7,470	362.3*
	Eco66g12	Sheeds Creek	3,568	93.2
			Geometric Mean (Target Load)	**110.4**
67f	Eco67f06	Clear Creek	1,963	513.0
	Eco67f13	White Creek	1,724	366.4
	Eco67f17	Big War Creek	30,062	543.8
			Geometric Mean (Target Load)	**467.6**

*Significantly higher load in Ecosite 66g09 than in other 66g ecosites probably due to greater difference in elevation and number and type of roads than in the other 66g ecosites.

Table 4 (Cont.) Average Annual Sediment Loads of Level IV Ecoregion Reference Sites

Level 4 Ecoregion	Reference Site	Stream	Drainage Area (acres)	Average Annual Sediment Load [lbs/acre/year]
67g	Eco67g05	Bent Creek	21,058	524.0
	Eco67g08	Brymer Creek	4,237	552.0
	Eco67g09	Harris Creek	3,054	571.1
	Eco67g10	Flat Creek	13,236	578.8
	Eco67g11	N Prong Fishdam Creek	1,019	766.8
			Geometric Mean (Target Load)	**593.0**
67h	Eco67h04	Blackburn Creek	653	497.9
	Eco67h06	Laurel Creek	1,793	512.3
			Geometric Mean (Target Load)	**505.0**
67i	Eco67i12	Mill Branch	681	284.3
			(Target Load)	**284.3**

5.0 WATER QUALITY ASSESSMENT AND DEVIATION FROM TARGET

Using the methodology described in Appendix B, the WCS Sediment Tool was used to determine the average annual instream sediment load for all HUC-12 subwatersheds in the Nolichucky River Watershed (ref.: Figure 4). Existing sediment loads for subwatersheds with waterbodies listed on the 2006 303(d) List as impaired for siltation/habitat alteration are summarized in Table 5.

6.0 SOURCE ASSESSMENT

An important part of the TMDL analysis is the identification of individual sources, source categories, or source subcategories of siltation in the watershed and the amount of pollutant loading contributed by each of these sources. Under the Clean Water Act, sources are broadly classified as either point or nonpoint sources. In 40 CFR 122.2, a point source is defined as a discernable, confined and discrete conveyance from which pollutants are or may be discharged to surface waters. The National Pollutant Discharge Elimination System (NPDES) program regulates point source discharges. Regulated point sources include: 1) municipal and industrial wastewater treatment facilities (WWTFs); 2) storm water discharges associated with industrial activity (which includes construction activities); and 3) certain discharges from Municipal Separate Storm Sewer Systems (MS4s). A TMDL must provide Waste Load Allocations (WLAs) for all NPDES regulated point sources. For the purposes of these TMDLs, all sources of sediment loading not regulated by NPDES are considered nonpoint sources. The TMDL must provide a Load Allocation (LA) for these sources.

Figure 6 Reference Sites in Level IV Ecoregions 66d, 66e, 66f, 66g, 67f, 67g, 67h, and 67i

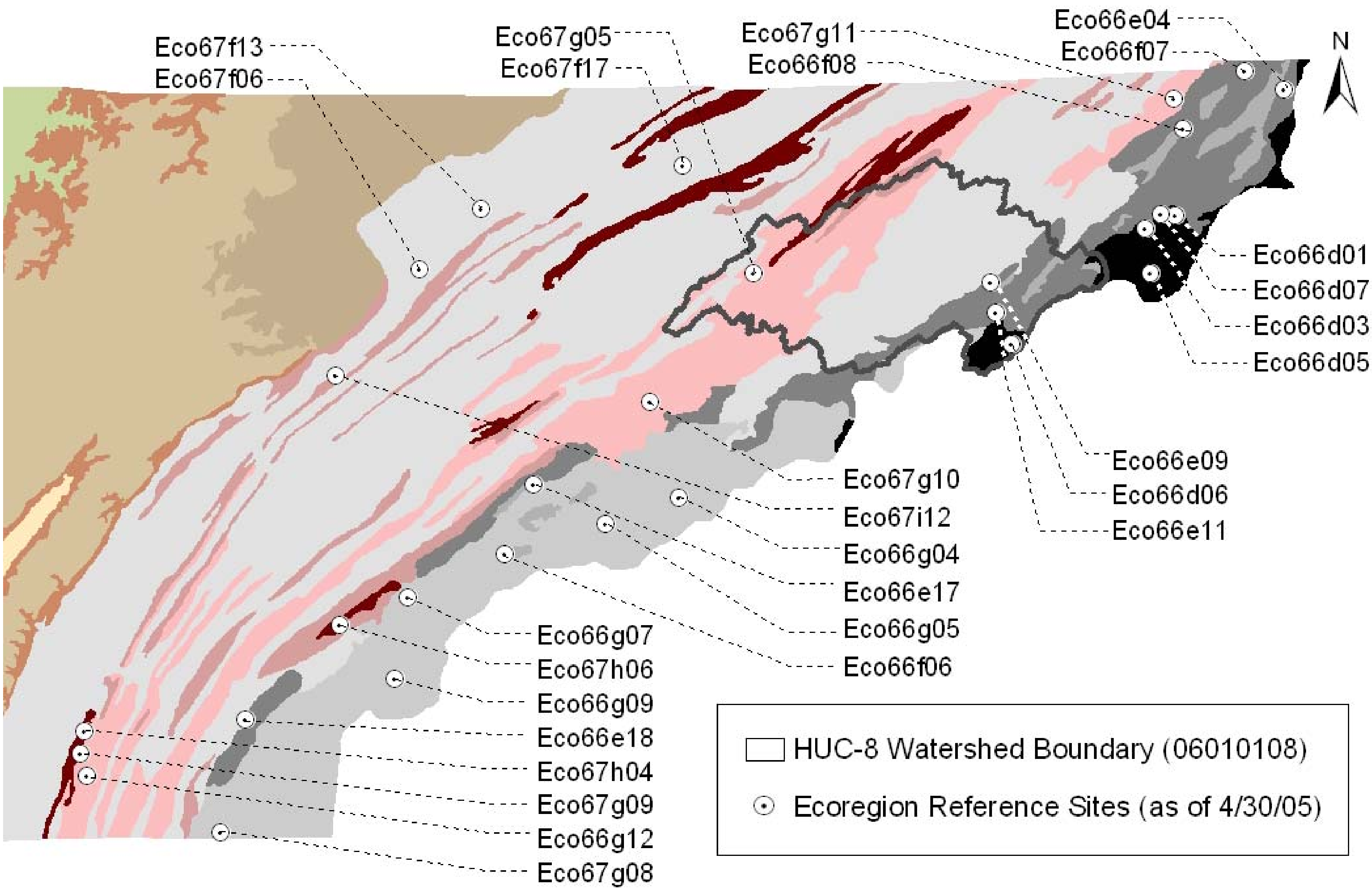


Table 5 Existing Sediment Loads in Subwatersheds With Impaired Waterbodies

HUC-12 Subwatershed (06010108____)	Existing Sediment Load [lbs/ac/yr]
0201	474
0202	404
0203	535
0204	707
0205	814
0206	625
0401	601
0402	719
0501	637
0502	341
0503	246
0504	619
0505	730
0506	693
0601	552
0603	555
0604	710
0605	696
0701	537
0702	438
0703	439
0705	627

6.1 Point Sources

6.1.1 NPDES Regulated Wastewater Treatment Facilities

As stated in Section 3.0, the TSS component of STP discharges is generally composed of primarily organic material and is considered to be different in nature than the sediments produced from erosional processes. Therefore, TSS discharges from STPs are not included in the TMDLs developed for this document.

6.1.2 NPDES Regulated Ready Mixed Concrete Facilities

Discharges from regulated Ready Mixed Concrete Facilities (RMCFs) may contribute sediment to surface waters as TSS discharges (TSS discharged from RMCFs is composed of primarily inorganic material and is therefore included as a source for TMDL development). Most of these facilities obtain coverage under NPDES Permit No. TNG110000, *General NPDES Permit for Discharges of Storm Water Runoff and Process Wastewater Associated With Ready Mixed Concrete Facilities* (TDEC, 2007). This permit establishes a daily maximum TSS concentration limit of 50 mg/l on process wastewater effluent and specifies monitoring procedures for storm water discharges. Facilities are also required to develop and implement storm water pollution prevention plans (SWPPPs). Discharges from RMCFs are generally intermittent, and contribute a small portion of total sediment loading to HUC-12 subwatersheds (ref.: Appendix E). In some cases, for discharges into impaired waters, sites may be required to obtain coverage under an individual NPDES permit. All four of the permitted RMCFs in the Nolichucky River Watershed are located in impaired subwatersheds. These facilities are listed in Table 6 and shown in Figures 7 and 8.

Table 6 NPDES Regulated Ready Mixed Concrete Facilities Located in Impaired Subwatersheds (as of November 26, 2007)

HUC-12 Subwatershed (06010108___)	NPDES Permit No.	Facility Name	TSS Daily Max Limit	TSS Cut-off Conc. (SW Discharge)
			[mg/l]	[mg/l]
0202	TNG110164	Summers-Taylor Concrete Plant (Erwin Plant)	50	150
0501	TNG110215	Summers-Taylor Concrete Plant (Greeneville)		
0504	TNG110132	Greeneville Concrete Plant		
0601	TNG110332	Summers-Taylor Concrete Plant (Lowland Concrete Plant)		

6.1.3 NPDES Regulated Mining Sites

Discharges from regulated mining activities may contribute sediment to surface waters as TSS (TSS discharged from mining sites is composed of primarily inorganic material and is therefore included as a source for TMDL development). Discharges from active mines may result from dewatering operations and/or in response to storm events, whereas discharges from permitted inactive mines are only in response to storm events. Inactive sites with successful surface reclamation contribute relatively little solids loading. Of the ten permitted mining sites in the Nolichucky River Watershed, nine are located in impaired subwatersheds. These facilities are listed in Table 7 and shown in Figures 7 and 8. Sediment loads (as TSS) to waterbodies from mining site discharges are very small in relation to total sediment loading (ref.: Appendix E).

Figure 7 NPDES Regulated RMCFs and Mining Sites Located in Impaired Subwatersheds - Western HUC-12s

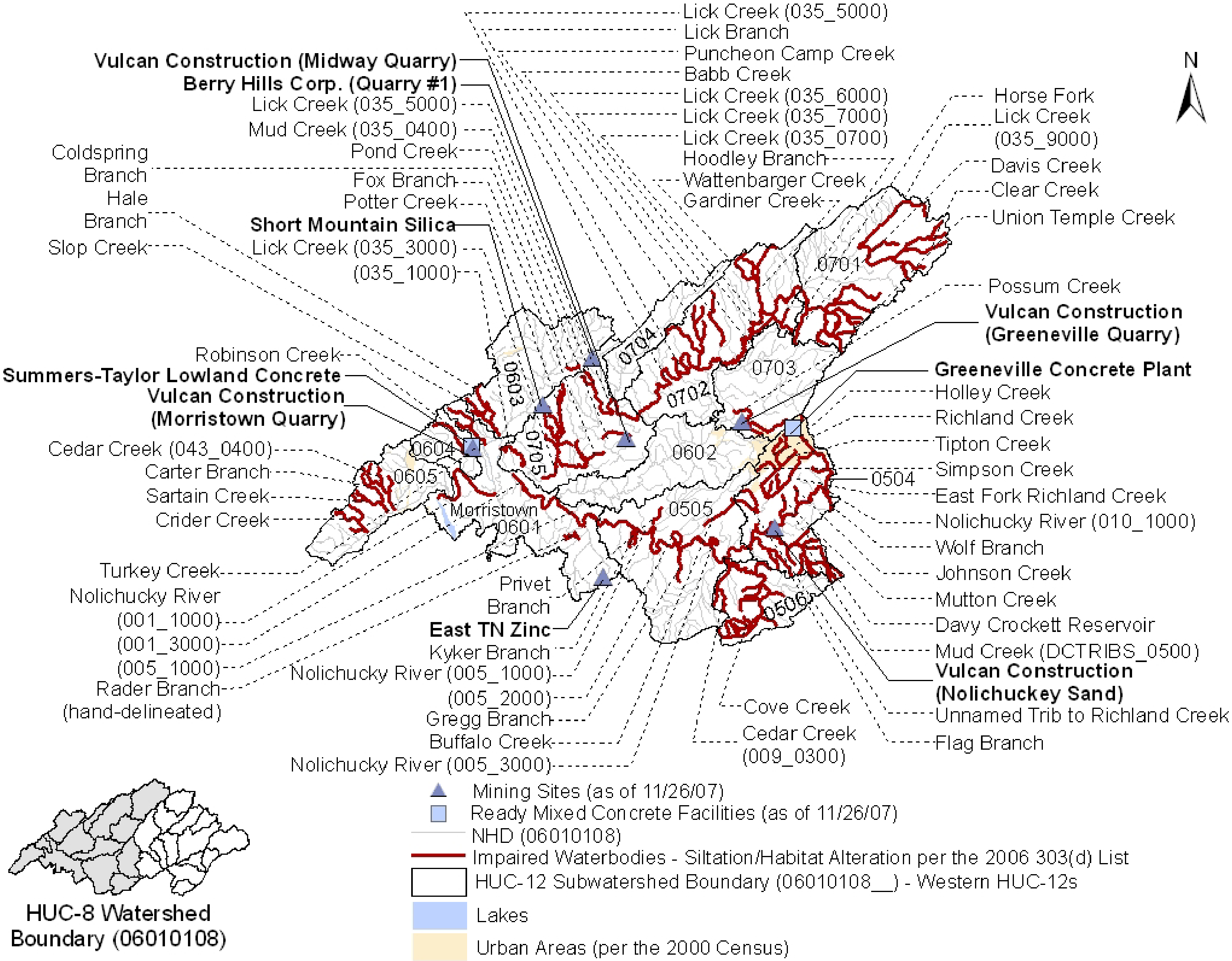


Figure 8 NPDES Regulated RMCFs and Mining Sites Located in Impaired Subwatersheds - Eastern HUC-12s

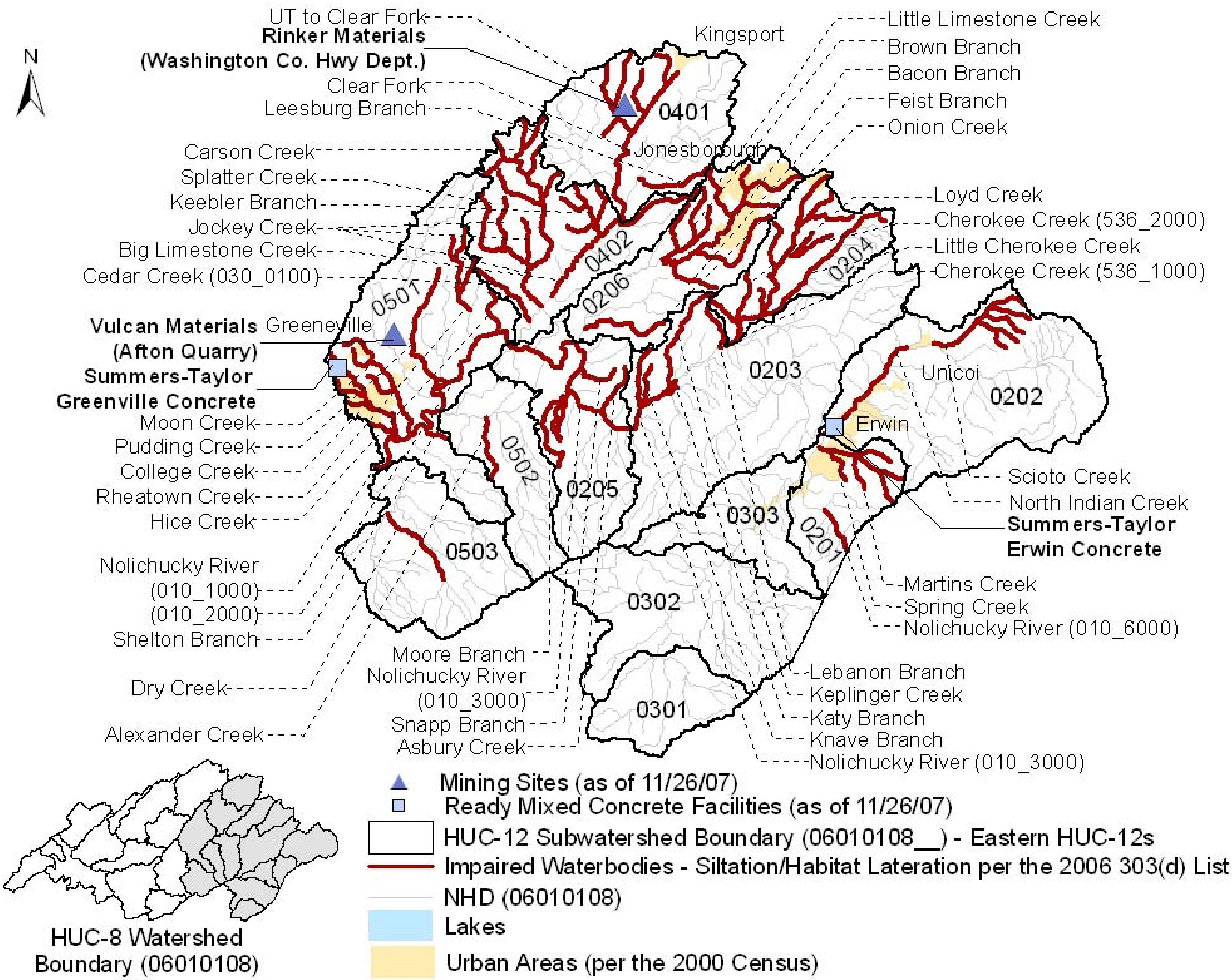


Table 7 NPDES Regulated Mining Sites Permitted to Discharge TSS and Located in Impaired Subwatersheds (as of November 26, 2007)

HUC-12 Subwatershed (06010108___)	NPDES Permit No.	Name	TSS Daily Max Limit [mg/l]
0401	TN0066010	Washington Co. Highway Department	40
0501	TN0066681	Vulcan Construction (Afton Quarry)	
0504	TN0072303	Vulcan Construction (Birds Bridge Dredge)	
0601	TN0027677	East Tennessee Zinc Co.	
	TN0065994	Vulcan Construction (Morristown Quarry)	
0603	TN0076201	Berry Hills Corporation (Quarry 1)	
0703	TN0060879	Vulcan Construction (Greeneville Quarry)	
0705	TN0054291	Short Mount Silica	
	TN0068896	Vulcan Construction (Midway Quarry)	

6.1.4 NPDES Regulated Construction Activities

Discharges from NPDES regulated construction activities are considered point sources of sediment loading to surface waters and occur in response to storm events. Currently, discharges of storm water from construction activities disturbing an area of one acre or more must be authorized by an NPDES permit. Most of these construction sites obtain coverage under NPDES Permit No. TNR10-0000, *General NPDES Permit for Storm Water Discharges Associated With Construction Activity* (TDEC, 2005). Since construction activities at a site are of a temporary, relatively short-term nature, the number of construction sites covered by the general permit at any instant of time varies. Of the 177 permitted active construction storm water sites in the Nolichucky River Watershed on May 8, 2007, 153 were in impaired subwatersheds (ref.: Figures 9 and 10).

6.1.5 NPDES Regulated Municipal Separate Storm Sewer Systems (MS4s)

MS4s may discharge sediment to waterbodies in response to storm events through road drainage systems, curb and gutter systems, ditches, and storm drains. These systems convey urban runoff from surfaces such as bare soil and wash-off of accumulated street dust and litter from impervious surfaces during rain events. Phase I of the EPA storm water program requires large and medium MS4s to obtain NPDES storm water permits. Large and medium MS4s are those located in incorporated places or counties serving populations greater than 100,000 people. At present, there are no large or medium MS4s in the Nolichucky River Watershed.

Figure 9 Location of NPDES Permitted Construction Storm Water Sites in the Nolichucky River Watershed - Western HUC-12s

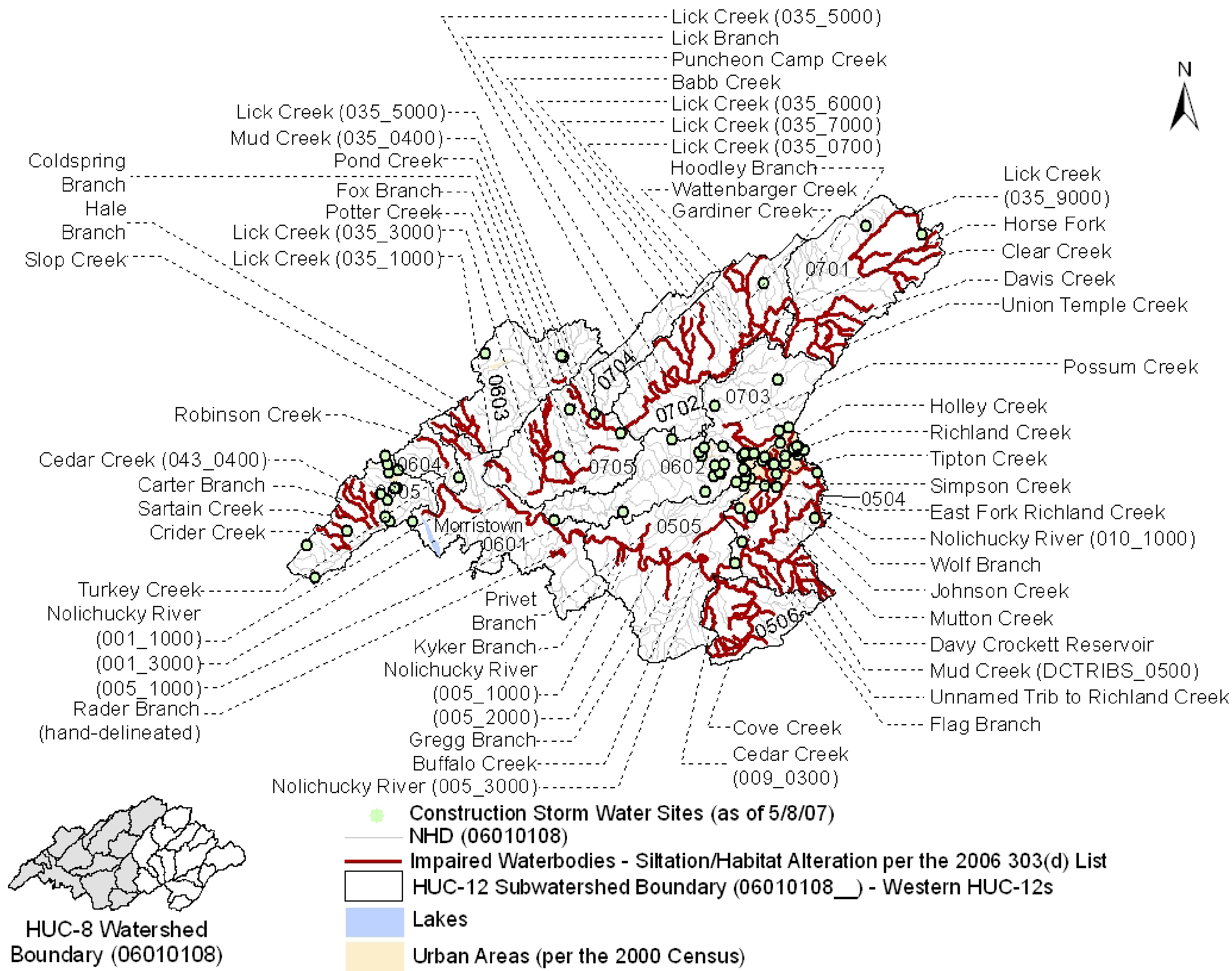
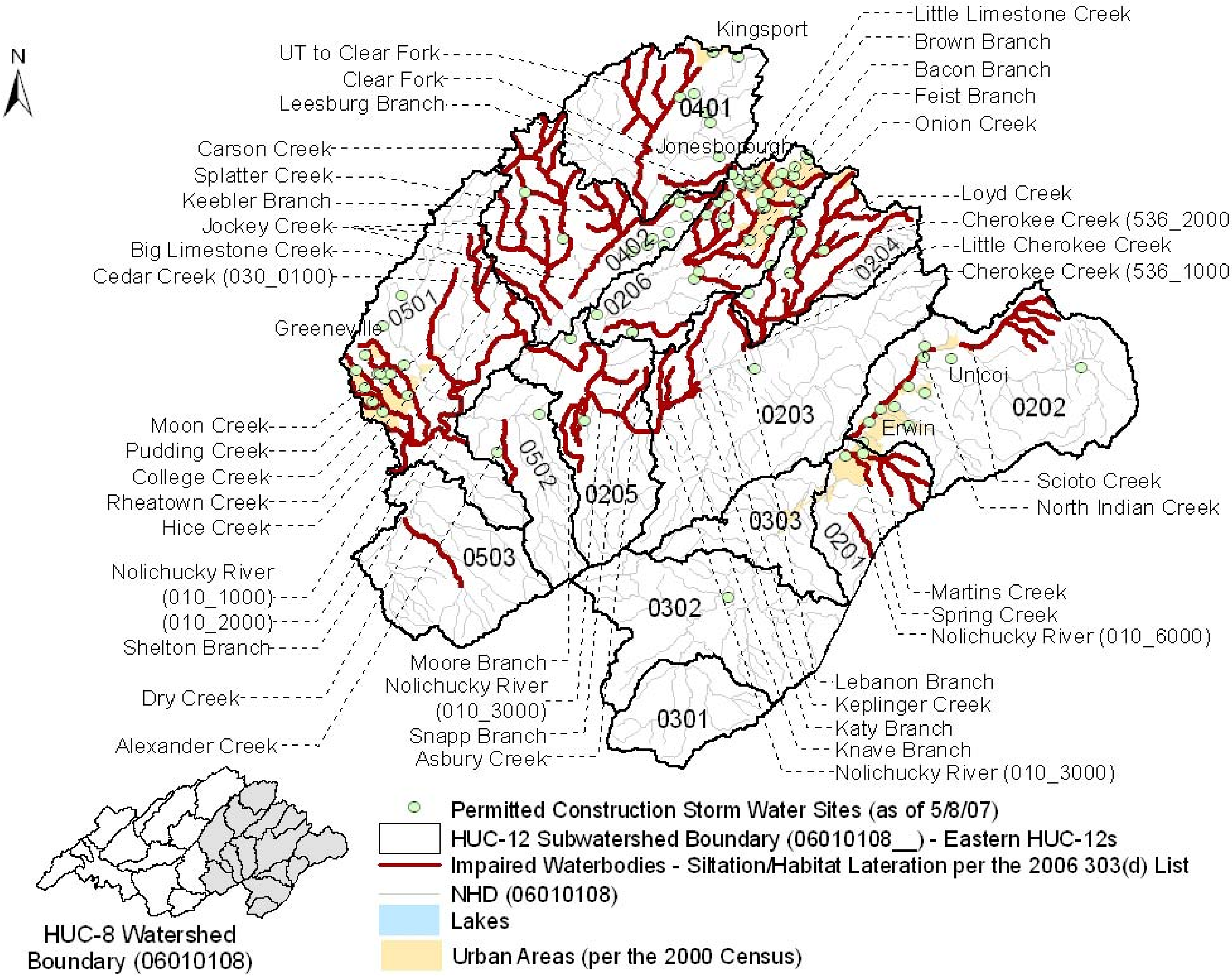


Figure 10 Location of NPDES Permitted Construction Storm Water Sites in the Nolichucky River Watershed - Eastern HUC-12s



As of March 2003, regulated small MS4s in Tennessee must also obtain NPDES permits in accordance with the Phase II storm water program. A small MS4 is designated as *regulated* if: a) it is located within the boundaries of a defined urbanized area that has a residential population of at least 50,000 people and an overall population density of 1,000 people per square mile; b) it is located outside of an urbanized area but within a jurisdiction with a population of at least 10,000 people, a population density of 1,000 people per square mile, and has the potential to cause an adverse impact on water quality; or c) it is located outside of an urbanized area but contributes substantially to the pollutant loadings of a physically interconnected MS4 regulated by the NPDES storm water program. Most regulated small MS4s in Tennessee obtain coverage under the *NPDES General Permit for Discharges from Small Municipal Separate Storm Sewer Systems* (TDEC, 2003). There are five permitted Phase II small MS4s in the Nolichucky River Watershed:

NPDES Permit Number	Permittee Name
TNS075728	Jonesborough
TNS075710	Greeneville
TNS077763	Hamblen County
TNS075574	Hawkins County
TNS075787	Washington County

The Tennessee Department of Transportation (TDOT) has been issued an individual MS4 permit (TNS077585) that authorizes discharges of storm water runoff from State road and interstate highway rights-of-way that TDOT owns or maintains, discharges of storm water runoff from TDOT owned or operated facilities, and certain specified non-storm water discharges. This permit covers all eligible TDOT discharges statewide, including those located outside of urbanized areas.

Information regarding storm water permitting in Tennessee may be obtained from the TDEC website at http://www.state.tn.us/environment/wpc/stormh2o/.

6.2 Nonpoint Sources

Nonpoint sources account for the vast majority of sediment loading to surface waters. These sources include:

- Natural erosion occurring from the weathering of soils, rocks, and uncultivated land; geological abrasion; and other natural phenomena.
- Erosion from agricultural activities can be a major source of sedimentation due to the large land area involved and the land-disturbing effects of cultivation. Grazing livestock can leave areas of ground with little vegetative cover. Unconfined animals with direct access to streams can cause streambank damage.
- Urban erosion from bare soil areas under construction and washoff of accumulated street dust and litter from impervious surfaces.
- Erosion from unpaved roadways can be a significant source of sediment to rivers and streams. It occurs when soil particles are loosened and carried away from the roadway, ditch, or road bank by water, wind, or traffic. The actual road construction (including erosive road-fill soil

types, shape and size of coarse surface aggregate, poor subsurface and/or surface drainage, poor road bed construction, roadway shape, and inadequate runoff discharge outlets or "turn-outs" from the roadway) may aggravate roadway erosion. In addition, external factors such as roadway shading and light exposure, traffic patterns, and road maintenance may also affect roadway erosion. Exposed soils, high runoff velocities and volumes and poor road compaction all increase the potential for erosion.

- Runoff from abandoned mines may be significant sources of solids loading. Mining activities typically involve removal of vegetation, displacement of soils, and other significant land disturbing activities.
- Soil erosion from forested land that occurs during timber harvesting and reforestation activities. Timber harvesting includes the layout of access roads, log decks, and skid trails; the construction and stabilization of these areas; and the cutting of trees. Established forest areas produce very little soil erosion.

For impaired waterbodies within the Nolichucky River Watershed, the primary sources of nonpoint sediment loads come from agriculture, roadways, and urban sources. The watershed land use distribution based on the 1992 MRLC satellite imagery databases is shown in Appendix C for impaired HUC-12 subwatersheds.

7.0 DEVELOPMENT OF TOTAL MAXIMUM DAILY LOADS

The TMDL process quantifies the amount of a pollutant that can be assimilated in a waterbody, identifies the sources of the pollutant, and recommends regulatory or other actions to be taken to achieve compliance with applicable water quality standards based on the relationship between pollution sources and instream water quality conditions. A TMDL can be expressed as the sum of all point source loads (Waste Load Allocations), non-point source loads (Load Allocations) and an appropriate margin of safety (MOS), which takes into account any uncertainty concerning the relationship between effluent limitations and water quality:

$$\text{TMDL} = \Sigma \text{ WLAs} + \Sigma \text{ LAs} + \text{MOS}$$

The objective of a TMDL is to allocate loads among all of the known pollutant sources throughout a watershed so that appropriate control measures can be implemented and water quality standards achieved. 40 CFR §130.2 (i) states that TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure. It should be noted, however, that as a result of a recent court decision, EPA has recommended that all TMDLs, WLAs, and LAs include "a daily time increment in conjunction with other temporal expressions that may be necessary to implement relevant water quality standards" (USEPA, 2007). The TMDLs and allocations developed in this document are in accordance with this guidance.

7.1 Sediment Loading Analysis Methodology

TMDL analyses were performed on a 12-digit hydrologic unit code (HUC-12) area basis for subwatersheds containing waterbodies identified as impaired due to siltation and/or habitat alteration on the 2006 303(d) List. HUC-12 subwatershed boundaries are shown in Figures 4 and 5.

7.1.1 Primary Analysis

Primary sediment loading analysis for impaired subwatersheds in the Nolichucky River Watershed was conducted using the Watershed Characterization System (WCS) Sediment Tool. WCS is an ArcView geographic information system (GIS) based program developed by USEPA Region IV to facilitate watershed characterization and TMDL development. The Sediment Tool is an extension of WCS that utilizes available GIS coverages (land use, soils, elevations, roads, etc), the Universal Soil Loss Equation (USLE) to calculate potential erosion, and sediment delivery equations to calculate sediment delivery to the stream network (see Appendix B).

Using the Sediment Tool, the existing average annual instream sediment load of each impaired HUC-12 subwatershed was determined. This value was compared to the appropriate ecoregion-based target load specified in Section 4 and the overall required percent reduction in instream sediment loading calculated. A portion of the target load was reserved to account for discharges from NPDES permitted RMCFs, mining sites, and construction sites, with the remainder allocated to MS4s and nonpoint source loading. Daily expressions of allowable loads were developed for precipitation-based sources by dividing the calculated average annual target load by the average annual precipitation.

The primary loading analysis methodology is described in detail in Appendix D.

7.1.2 Supplemental Analysis for Selected Subwatersheds

Primary sediment loading analysis of impaired Subwatersheds 060101080601, 060101080702, and 060101080703 indicated that calculated existing loads in these subwatersheds were lower than the corresponding ecoregion reference site-based target loads. One possible reason for these results is that the analysis was conducted on a HUC-12 subwatershed spatial scale with primary output expressed an average annual loading condition. Individual waterbody assessments, however, were based on biological (benthic) monitoring conducted at specific stream locations on a specific day. This suggests that, in some instances, localized, site-specific conditions were not adequately represented by the larger scale loading model. As stated in the Protocol for Developing Sediment TMDLs (USEPA, 1999):

> The watershed processes that cause adverse sediment impacts are rarely simple. These processes often vary substantially over time and space, affect designated uses in more than one way (e.g., fish spawning and rearing life stages), and are frequently difficult to relate to specific sediment sources.…In many watersheds, more than one indicator and associated numeric target might be appropriate to account for process complexity and the potential lack of certainty regarding the effectiveness of an individual indicator (*emphasis added*).

In consideration of the complexity of processes associated with siltation/habitat alteration impairment of surface waters, a second surrogate indicator relating to the biological health of a waterbody was utilized in cases where the primary method of analysis could not fully represent site-specific conditions. Since many waterbody assessments are based on biological surveys (ref.: Section 3.0), the waterbody habitat assessment score was selected as the appropriate second indicator target.

Target habitat assessment scores were based on the median score for Level IV ecoregion reference sites located in the same ecoregion as the impaired waterbodies. Information regarding habitat assessment parameters and protocols for ecoregion reference streams can be found in *Habitat Quality of Least Impacted Streams in Tennessee* (TDEC, 2001). Target habitat assessment scores for ecoregions 67f and 67g are 175 and 156, respectively.

TMDLs, WLAs, and LAs were developed for impaired Subwatersheds 060101080601, 060101080702, and 060101080703 based on both the results of the primary sediment analysis and the second indicator (habitat assessment scores). Target habitat scores are included as part of WLAs only in cases where the permitted discharge receiving stream has been assessed as impaired (ref.: Table 2) and the calculated existing average annual sediment load is less than the ecoregion-based target load.

Habitat assessment sheets for impaired waterbodies in Subwatersheds 060101080601, 060101080702, and 060101080703 can be found in Appendix G.

7.2 TMDLs for Impaired Subwatersheds

For each impaired subwatershed except 060101080601, 060101080702, and 060101080703, the TMDL consists of: a) the required overall percent reduction in instream sediment loading and b) the allowable daily instream sediment load per unit area per inch of precipitation (lbs/ac/in. precipitation).

TMDLs for Subwatersheds 060101080601, 060101080702, and 060101080703 are considered to be equal to: a) average annual instream sediment loads equal to the appropriate ecoregion target (ref.: Section 4.0), b) the allowable daily instream sediment load per unit area per inch of precipitation (lbs/ac/in. precipitation), and c) habitat assessment scores equal to or greater than the appropriate ecoregion target.

TMDLs for impaired subwatersheds are summarized in Tables 8 and 9.

7.3 WLAs for Point Sources

7.3.1 Waste Load Allocations for NPDES Regulated Ready Mixed Concrete Facilities

All four of the NPDES permitted Ready Mixed Concrete Facilities (RMCFs) in the Nolichucky River Watershed are located in impaired subwatersheds (ref.: Table 6 and Figures 7 and 8). WLAs for these facilities are equal to the loads authorized by their existing permits. Sediment loading from RMCFs is very small (ref.: Appendix E) compared to the total loading for impaired subwatersheds, therefore, further reductions from these facilities were not considered warranted. With respect to the Summers-Taylor Lowland Concrete Plant, located in subwatershed 060101080601, since the facility discharges to Flat Creek, which was not assessed as impaired due to siltation or habitat alteration (ref.: Table 2), a minimum instream habitat score was not specified as part of the WLA for this facility.

Table 8 Sediment TMDLs for Subwatersheds with Waterbodies Impaired for Siltation/Habitat Alteration

HUC-12 Subwatershed (06010108___)	Waterbody ID	Waterbody Impaired by Siltation/ Habitat Alteration	TMDL [a]	
			Required Overall Load Reduction	Daily Maximum Load
			[% Reduction]	[lbs/ac/in. precip.]
0201	06010108010_1900	Martins Creek	77.8	2.11
	06010108010_1910	Spring Creek		
	06010108010_6000	Nolichucky River		
0202	06010108029_0300	Scioto Creek	74.0	2.06
	06010108029_1000	North Indian Creek		
0203	06010108010_3000 [b]	Nolichucky River	80.3	2.22
	06010108010_1200	Knave Branch		
	06010108010_1300	Keplinger Creek		
	06010108010_1400	Lebanon Branch		
	06010108010_3100	Katy Branch		
0204	06010108536_0100	Loyd Creek	33.9	10.28
	06010108536_0200	Little Cherokee Creek		
	06010108536_1000	Cherokee Creek		
	06010108536_2000	Cherokee Creek		
0205	06010108010_0900	Snapp Branch	87.1	2.31
	06010108010_3000 [b]	Nolichucky River		
	06010108010_1100	Asbury Creek		
	06010108010_3600	Moore Branch		
0206	06010108510_0100	Brown Branch	25.1	10.60
	06010108510_0200	Bacon Branch		
	06010108510_0300	Feist Branch		
	06010108510_0500	Onion Creek		
	06010108510_2000	Little Limestone Creek		
0401	06010108030_0400	Clear Fork	22.3	10.48
	06010108030_0420	Unnamed Trib To Clear Fork		
	06010108030_0431	Leesburg Branch		

Table 8 (Cont.) Sediment TMDLs for Subwatersheds with Waterbodies+ Impaired for Siltation/Habitat Alteration

HUC-12 Subwatershed (06010108___)	Waterbody ID	Waterbody Impaired by Siltation/ Habitat Alteration	TMDL [a]	
			Required Overall Load Reduction	Daily Maximum Load
			[% Reduction]	[lbs/ac/in. precip.]
0402	06010108030_0100	Cedar Creek	34.9	10.70
	06010108030_0200	Jockey Creek		
	06010108030_0210	Splatter Creek		
	06010108030_0220	Carson Creek		
	06010108030_0300	Keebler Branch		
	06010108030_2000	Big Limestone Creek		
0501	06010108005_0710	Shelton Branch	26.7	10.80
	06010108010_0300	College Creek		
	06010108010_0400	Moon Creek		
	06010108010_0500	Pudding Creek		
	06010108010_0750	Rheatown Creek		
	06010108010_0800	Hice Creek		
	06010108010_1000 [b]	Nolichucky River		
	06010108010_2000	Nolichucky River		
0502	06010108088_0200	Alexander Creek	69.2	2.33
0503	06010108456_0200	Dry Creek	57.1	2.31
0504	06010108010_0200	Holley Creek	24.5	10.85
	06010108010_1000 [b]	Nolichucky River		
	06010108010_3800	Wolf Branch		
	06010108102_0100	Unn. Trib. To Richland Creek		
	06010108102_0200	Simpson Creek		
	06010108102_0300	Tipton Creek		
	06010108102_0400	East Fork Richland Creek		
	06010108102_2000	Richland Creek		
	06010108DCROCKETT_1000	Davy Crockett Reservoir		
	06010108DCTRIBS_0200	Johnson Creek		
	06010108DCTRIBS_0500 *	Mud Creek		
	06010108DCTRIBS_0600	Flag Branch		
	06010108DCTRIBS_0100	Mutton Creek		

Table 8 (Cont.) Sediment TMDLs for Subwatersheds with Waterbodies Impaired for Siltation/Habitat Alteration

HUC-12 Subwatershed (06010108___)	Waterbody ID	Waterbody Impaired by Siltation/ Habitat Alteration	TMDL [a]	
			Required Overall Load Reduction	Daily Maximum Load
			[% Reduction]	[lbs/ac/in. precip.]
0505	06010108005_0310	Privet Branch	36.0	10.87
	06010108005_0500	Gregg Branch		
	06010108005_0800	Kyker Branch		
	06010108005_1000 [b]	Nolichucky River		
	06010108005_2000	Nolichucky River		
	06010108005_3000	Nolichucky River		
	06010108033_0100	Buffalo Creek		
0506	06010108009_0300	Cedar Creek	84.8	2.43
	06010108009_1000	Cove Creek		
	06010108DCTRIBS_0500 [b]	Mud Creek		
0603	06010108042_0100	Hale Branch	15.8	10.70
	06010108042_0110	Slop Creek		
	06010108042_0612	Coldspring Branch		
0604	06010108001_0110	Robinson Creek	34.1	10.46
0605	06010108043_0200	Crider Creek	32.8	10.39
	06010108043_0300	Sartain Creek		
	06010108043_0310	Carter Branch		
	06010108043_0400	Cedar Creek		
0701	06010108035_1900	Clear Creek	13.0	10.68
	06010108035_2300	Horse Fork		
	06010108035_2310	Union Temple Creek		
	06010108035_2320	Davis Creek		
	06010108035_2400	Hoodley Branch		
	06010108035_9000	Lick Creek		
0705	06010108035_0200	Potter Creek	5.5	13.79
	06010108035_0400	Mud Creek		
	06010108035_1000	Lick Creek		
	06010108035_2810	Pond Creek		
	06010108035_2900	Fox Branch		
	06010108035_3000	Lick Creek		
	06010108035_5000 *	Lick Creek		

Notes: a. Applicable to instream sediment at the pour point of the HUC-12 subwatershed.
b. Waterbody extends into two HUC-12 subwatersheds.

Table 9 Sediment TMDLs for Subwatersheds 060101080601, 060101080702, and 060101080703

HUC-12 Subwatershed (06010108___)	Waterbody ID	Waterbody Impaired by Siltation/ Habitat Alteration	Level IV Ecoregion	TMDL		
				Maximum Instream Sediment Load		Minimum Habitat Score
				[lbs/ac/yr]	[lbs/ac/in. precip.]	
0601	06010108001_0200	Turkey Creek	67g	593	13.70	156
	06010108001_1000	Nolichucky River				
	06010108001_3000	Nolichucky River				
	06010108005_1000[a]	Nolichucky River				
	06010108005_1121	Rader Branch				
0702	06010108035_0700	Lick Branch	67g	593	13.73	156
	06010108035_0900	Puncheon Camp Creek				
	06010108035_1110	Babb Creek				
	06010108035_1400	Gardiner Creek				
	06010108035_1410	Wattenbarger Creek				
	06010108035_5000[a]	Lick Creek				
	06010108035_6000	Lick Creek				
	06010108035_7000	Lick Creek				
0703	06010108035_2521	Possum Creek	67f	467.6	10.87	175

7.3.2 Waste Load Allocations for NPDES Regulated Mining Activities

Of the ten NPDES permitted mining sites in the Nolichucky River Watershed, nine are located in impaired subwatersheds (ref.: Table 7 and Figures 7 and 8). WLAs for these sites are equal to loads authorized by their existing permits. Since sediment loading from mining activities is small (ref.: Appendix E) compared to the total loading for impaired subwatersheds, further reductions were not considered warranted.

With respect to the Vulcan Construction Morristown Quarry, located in subwatershed 060101080601, since the facility discharges to Flat Creek, which was not assessed as impaired due to siltation or habitat alteration (ref.: Table 2), a minimum instream habitat score was not specified as part of the WLA for this facility. With respect to the East Tennessee Zinc Co., located in 060101080601, since the facility discharges to Beaver Creek and Lost Creek, which were not assessed as impaired due to siltation or habitat alteration (ref.: Table 2), a minimum instream habitat score was not specified as part of the WLA for this facility. Although the Vulcan Construction Greeneville Quarry, located in subwatershed 060101080703, does discharge to Possum Creek, which was assessed as impaired due to habitat alteration (ref.: Table 2), the source of pollution to this waterbody was identified as pasture grazing. For this reason, a minimum instream habitat score was not specified as part of the WLA for this mining site.

7.3.3 Waste Load Allocations for NPDES Regulated Construction Activities

Point source discharges of storm water from construction activities (including clearing, grading, filling, excavating, or similar activities) that result in the disturbance of one acre or more of total land area must be authorized by an NPDES permit (ref.: Section 6.1.4). Since these discharges have the potential to transport sediment to surface waters, WLAs are provided for this category of activities. WLAs are equal to a) an average annual <u>erosion</u> load from the construction site of 6,000 lbs/ac/yr <u>and</u> b) the allowable daily erosion load per unit area per inch of precipitation (lbs/ac/in. precipitation).

Note: WLAs for construction storm water discharges are technology based and are specified as allowable <u>erosion</u> loads from construction sites. TMDLs, other WLAs, and LAs are discussed in terms of <u>instream</u> sediment loading. The relationship between erosion and sediment delivered to surface waters is discussed in Appendices B and D.

In addition to the above, WLAs for construction sites located in subwatersheds 060101080601, 060101080702, and 060101080703 that discharge to waterbodies identified as impaired due to siltation or habitat alteration on the 2006 303(d) List (ref.: Table 2) will include a minimum habitat score requirement (see Table 11).

7.3.3 Waste Load Allocations for NPDES Regulated Municipal Separate Storm Sewer Systems (MS4s)

Municipal separate storm sewer systems (MS4s) are regulated by the State's NPDES program (ref.: Section 6.1.5). Since MS4s have the potential to discharge TSS to surface waters, WLAs are specified for these systems. WLAs are established for each HUC-12 subwatershed containing a waterbody identified on the *2006 303(d) List* as impaired due to siltation and/or habitat alteration (ref.: Table 2). WLAs for most impaired subwatersheds are expressed as: a) the required percent reduction in the estimated average annual instream sediment loading for an impaired subwatershed, relative to the estimated average annual instream sediment loading of a biologically healthy (reference) subwatershed located in the same Level IV ecoregion (minus the percent reserved for RMCFs, regulated mining sites, and CSW sites) and b) the allowable daily instream sediment load per unit area per inch of precipitation (lbs/ac/in. precipitation). Instream sediment loads are evaluated at the pour point of the HUC-12 subwatershed.

WLAs for MS4 discharges in subwatersheds 060101080601, 060101080702, and 060101080703 include: a) the average annual instream sediment loads equal to the appropriate ecoregion target minus the amount allocated to RMCFs, mining sites, and construction storm water sites; b) allowable daily instream sediment load (at the pour point of the HUC-12 subwatershed) per unit area per inch of precipitation (lbs/ac/in. precipitation); and c) habitat assessment scores equal to or greater than the appropriate ecoregion target.

WLAs for MS4s are tabulated in Tables 10 and 11 and apply to MS4 discharges in the impaired subwatershed for which the WLA was developed and will be implemented as Best Management Practices (BMPs) as specified in Phase I and II MS4 permits. WLAs should not be construed as numeric limits.

7.4 Load Allocations for Nonpoint Sources

All sources of sediment loading to surface waters not covered by the NPDES program are provided a Load Allocation (LA). LAs are established for each HUC-12 subwatershed containing a waterbody identified on the *2006 303(d) List* as impaired due to siltation and/or habitat alteration (ref.: Table 2). For most impaired subwatersheds, LAs are expressed as: a) the required percent reduction in the estimated average annual instream sediment loading for an impaired subwatershed, relative to the estimated average annual instream sediment loading of a biologically healthy (reference) subwatershed located in the same Level IV ecoregion (minus the percent reserved for RMCFs, regulated mining sites, and CSW sites) and b) allowable daily instream sediment load per unit area per inch of precipitation (lbs/ac/in. precipitation). Instream sediment loads are evaluated at the pour point of the HUC-12 subwatershed.

LAs for waterbodies in Subwatersheds 060101080601, 060101080702, and 060101080703 include: a) the average annual instream sediment loads equal to the appropriate ecoregion target minus the amount allocated to RMCFs, mining sites, and construction storm water sites; b) allowable daily instream sediment load (at the pour point of the HUC-12 subwatershed) per unit area per inch of precipitation (lbs/ac/in. precipitation); and c) habitat assessment scores equal to or greater than the appropriate ecoregion target. LAs are tabulated in Tables 10 and 11.

Table 10 Summary of WLAs for Construction Storm Water Sites and MS4s and LAs for Nonpoint Sources

HUC-12 Subwatershed (06010108_____)	WLAs				LAs [b]	
	Construction Storm Water [a]		MS4s [b]		Required Load Reduction	Daily Maximum Load
	Annual Average Load	Daily Maximum Load	Required Load Reduction	Daily Maximum Load		
	[lbs/ac/yr]	[lbs/ac/in. precip]	[%]	[lbs/ac/in. precip]	[%]	[lbs/ac/in. precip]
0201	6,000	120.2	89.5	1.00	89.5	1.00
0202	6,000	117.6	86.5	1.07	86.5	1.07
0203	6,000	126.6	91.2	0.99	91.2	0.99
0204	6,000	131.9	43.2	8.83	43.2	8.83
0205	6,000	131.9	93.4	1.17	93.4	1.17
0206	6,000	136.1	45.6	7.71	45.6	7.71
0401	6,000	134.5	30.6	9.36	30.6	9.36
0402	6,000	137.3	42.6	9.45	42.6	9.45
0501	6,000	138.6	36.2	9.40	36.2	9.40
0502	6,000	133.0	82.9	1.30	82.9	1.30
0503	6,000	131.9	71.7	1.53	71.7	1.53
0504	6,000	139.2	33.8	9.51	33.8	9.51
0505	6,000	139.5	43.9	9.53	43.9	9.53
0506	6,000	138.6	92.3	1.23	92.3	1.23
0601	See Table 11					
0603	6,000	137.3	25.6	9.46	25.6	9.46
0604	6,000	134.2	42.7	9.10	42.7	9.10
0605	6,000	133.3	41.2	9.10	41.2	9.10
0701	6,000	137.0	23.5	9.39	23.5	9.39
0702	See Table 11					
0703	See Table 11					
0705	6,000	139.5	14.2	12.52	14.2	12.52

Notes: a. Value shown is allowable erosion from construction site.
b. Applicable as instream sediment at pour point of HUC-12 subwatershed.

Table 11 Summary of WLAs for Construction Storm Water Sites and MS4s and LAs for Nonpoint Sources in Impaired Subwatersheds 060101080601, 060101080702, and 060101080703

Impaired HUC-12 Subwatershed (06010108__)	WLA						LA		
	Construction Storm Water			MS4s					
	Annual Average Load [a] [lbs/ac/yr]	Daily Maximum Load [a] [lbs/ac/in. precip]	Minimum Habitat Assessment Score [b]	Maximum Instream Sediment Load [c] [lbs/ac/yr]	Daily Maximum Load [c] [lbs/ac/in. precip]	Minimum Habitat Assessment Score	Maximum Instream Sediment Load [c] [lbs/ac/yr]	Daily Maximum Load [c] [lbs/ac/in. precip]	Minimum Habitat Assessment Score
0601	6,000	138.6	156	538.8	12.44	156	538.8	12.44	156
0702	6,000	138.9	156	534.3	12.37	156	534.3	12.37	156
0703	6,000	139.5	175	410.5	9.55	175	410.5	9.55	175

Notes: a. Value shown is allowable erosion from construction site.
b. Applicable to discharges to waterbodies identified as impaired due to siltation/habitat alteration on the 2006 303(d) List (see Table 2).
c. Applicable as instream sediment at pour point of HUC-12 subwatershed.

7.5 Margin of Safety

There are two methods for incorporating a Margin of Safety (MOS) in the analysis: a) implicitly incorporate the MOS using conservative model assumptions to develop allocations; or b) explicitly specify a portion of the TMDL as the MOS and use the remainder for allocations. In these TMDLs, an implicit MOS was incorporated through the use of conservative modeling assumptions. These include:

- Target values based on Level IV ecoregion reference sites. These sites represent the least impacted streams in the ecoregion.

- The use of the sediment delivery process that results in the most sediment transport to surface waters (Method 2 in Appendix B).

In most presently impaired subwatersheds, some amount of explicit MOS is realized due to the WLAs specified for NPDES permitted RMCFs and mining sites being less than the 5% of the target load reserved for these facilities.

7.6 Seasonal Variation

Sediment loading is expected to fluctuate according to the amount and distribution of rainfall. The determination of sediment loads on an average annual basis accounts for these differences through the rainfall erosivity index in the USLE (ref.: Appendix B). This is a statistic calculated from the annual summation of rainfall energy in every storm and its maximum 30-minute intensity.

8.0 IMPLEMENTATION PLAN

8.1 Point Sources

8.1.1 NPDES Regulated Ready Mixed Concrete Facilities

WLAs for facilities located in impaired subwatersheds will be implemented through NPDES Permit No. TNG110000, *General NPDES Permit for Discharges of Storm Water Runoff and Process Wastewater Associated With Ready Mixed Concrete Facilities* (TDEC, 2007).

8.1.2 NPDES Regulated Mining Sites

WLAs for mining sites located in impaired subwatersheds will be implemented through the existing permit requirements for these sites.

8.1.3 NPDES Regulated Construction Storm Water

The WLAs provided to existing and future NPDES regulated construction activities will be implemented through appropriate erosion prevention and sediment controls and Best Management Practices (BMPs) as specified in NPDES Permit No. TNR10-0000, *General NPDES Permit for Storm Water Discharges Associated With Construction Activit*y (TDEC, 2005). This permit requires the development and implementation of a site-specific Storm Water Pollution Prevention Plan

(SWPPP) prior to the commencement of construction activities. The SWPPP must be prepared in accordance with good engineering practices and the latest edition of the *Tennessee Erosion and Sediment Control Handbook* (TDEC, 2002) and must identify potential sources of pollution at a construction site that would affect the quality of storm water discharges and describe practices to be used to reduce pollutants in those discharges. In addition, the permit specifies a number of special requirements for discharges entering high quality waters, waters identified as impaired due to siltation, and waters that have an approved TMDL for a pollutant of concern. The permit does not authorize discharges that would result in a violation of a State water quality standard.

Unless otherwise stated, full compliance with the requirements of the *General NPDES Permit for Storm Water Discharges Associated With Construction Activit*y is considered to be consistent with the WLAs specified in Section 7.3.3 of this TMDL document.

8.1.4 NPDES Regulated Municipal Separate Storm Sewer Systems (MS4s)

For existing and future regulated discharges from municipal separate storm sewer systems (MS4s), WLAs will be implemented through Phase I and II MS4 permits. These permits will require the development and implementation of a Storm Water Management Plan (SWMP) that will reduce the discharge of pollutants to the "maximum extent practicable" and not cause or contribute to violations of State water quality standards. Both the *NPDES General Permit for Discharges from Small Municipal Separate Storm Sewer Systems* (TDEC, 2003) and the TDOT individual MS4 permit (TNS077585) require SWMPs to include the following six minimum control measures:

1) Public education and outreach on storm water impacts;
2) Public involvement/participation;
3) Illicit discharge detection and elimination;
4) Construction site storm water runoff control;
5) Post-construction storm water management in new development and re-development;
6) Pollution prevention/good housekeeping for municipal (or TDOT) operations.

The permits also contain requirements regarding control of discharges of pollutants of concern into impaired waterbodies, implementation of provisions of approved TMDLs, and description of methods to evaluate whether storm water controls are adequate to meet the requirements of approved TMDLs. In order to evaluate SWMP effectiveness and demonstrate compliance with specified WLAs, MS4s must develop and implement appropriate monitoring programs. An effective monitoring program could include:

- Effluent monitoring at selected outfalls that are representative of particular land uses or geographical areas that contribute to pollutant loading before and after implementation of pollutant control measures.
- Analytical monitoring of pollutants of concern in receiving waterbodies, both upstream and downstream of MS4 discharges, over an extended period of time.
- Instream biological monitoring at appropriate locations to demonstrate recovery of biological communities after implementation of storm water control measures.

The appropriate Environmental Field Office (EFO) (ref.: http://tennessee.gov/environment/eac/) should be consulted for assistance in the determination of monitoring strategies, locations, frequency, and methods within 12 months after the approval date of this TMDL. Details of the monitoring plan and monitoring data should be included in the annual report required by the MS4 permit.

8.2 Nonpoint Sources

The Tennessee Department of Environment & Conservation (TDEC) has no direct regulatory authority over most nonpoint source discharges. Reductions of sediment loading from nonpoint sources (NPS) will be achieved using a phased approach. Voluntary, incentive-based mechanisms will be used to implement NPS management measures in order to assure that measurable reductions in pollutant loadings can be achieved for the targeted impaired waters. Cooperation and active participation by the general public and various industry, business, and environmental groups is critical to successful implementation of TMDLs. Local citizen-led and implemented management measures offer the most efficient and comprehensive avenue for reduction of loading rates from nonpoint sources. There are links to a number of publications and information resources on USEPA's Nonpoint Source Pollution website (ref.: http://www.epa.gov/owow/nps/pubs.html) relating to the implementation and evaluation of nonpoint source pollution control measures.

TMDL implementation activities will be accomplished within the framework of Tennessee's Watershed Approach (ref.: http://www.state.tn.us/environment/wpc/watershed/). The Watershed Approach is based on a five-year cycle and encompasses planning, monitoring, assessment, TMDLs, WLAs/LAs, and permit issuance. It relies on participation at the federal, state, local, and nongovernmental levels to be successful.

The actions of local government agencies and watershed stakeholders should be directed to accomplish the goal of a reduction of sediment loading in the watershed. There are a number of measures that are particularly well-suited to action by local stakeholder groups. These measures include, but are not limited to:

- Detailed surveys of impaired subwatersheds to identify additional sources of sediment loading.
- Advocacy of local area ordinances and zoning that will minimize sediment loading to waterbodies, including establishment of buffer strips along streambanks, reduction of activities within riparian areas, and minimization of road and bridge construction impacts.
- Educating the public as to the detrimental effects of sediment loading to waterbodies and measures to minimize this loading.
- Advocacy of agricultural BMPs (e.g., riparian buffer, animal waste management systems, waste utilization, stream stabilization, fencing, heavy use area treatment protection, livestock exclusion, etc.) and practices to minimize erosion and sediment transport to streams. The Tennessee Department of Agriculture (TDA) keeps a database of BMPs implemented in Tennessee. Of the 400 BMPs in the Nolichucky River Watershed as of May 16, 2007, 392 are in sediment-impaired subwatersheds (ref.: Figures 11 and 12).

Excellent examples of stakeholder involvement for the implementation of nonpoint source load allocations (LAs) specified in an approved TMDL are the watershed groups, Upper Nolichucky Watershed Alliance (UNWA) and the Middle Nolichucky Watershed Alliance (MNWA).

The mission of UNWA is to protect and enhance the watershed by monitoring conditions, educating stakeholders, and building cooperative partnerships that enable us to implement progressive, innovative solutions to water quality issues. Members represent all walks of life - including the agricultural community, local government leaders, businesses and industry, students, average citizens, and environmental activists. UNWA monitors five streams plus the Nolichucky River in nine stations located in Unicoi and Washington counties. For more information, contact Kirsten Collins, Executive Chair, UNWAmail@aol.com.

The mission of the MNWA is to educate and involve the community through establishing public-private partnerships to develop and implement action plans to preserve, protect and improve the watersheds in the Middle Nolichucky Watershed. The vision of the group is to improve and protect all water resources in the Middle Nolichucky Watershed by involving people and organizations through public and private partnership. For more information, go to the website http://middlenolichuckywatershedalliance.org/index.php or contact Dana Ball at dmball@tva.gov or Chris Cooper at dccooper@tva.gov.

8.3 Evaluation of TMDL Effectiveness

The effectiveness of the TMDL will be assessed within the context of the State's rotating watershed management approach. Watershed monitoring and assessment activities will provide information by which the effectiveness of sediment loading reduction measures can be evaluated. Monitoring data, ground-truthing, and source identification actions will enable implementation of particular types of BMPs to be directed to specific areas in the subwatersheds. These TMDLs will be reevaluated during subsequent watershed cycles and revised as required to assure attainment of applicable water quality standards.

Figure 11 Location of Agricultural Best Management Practices in the Nolichucky River Watershed - Western HUC-12s

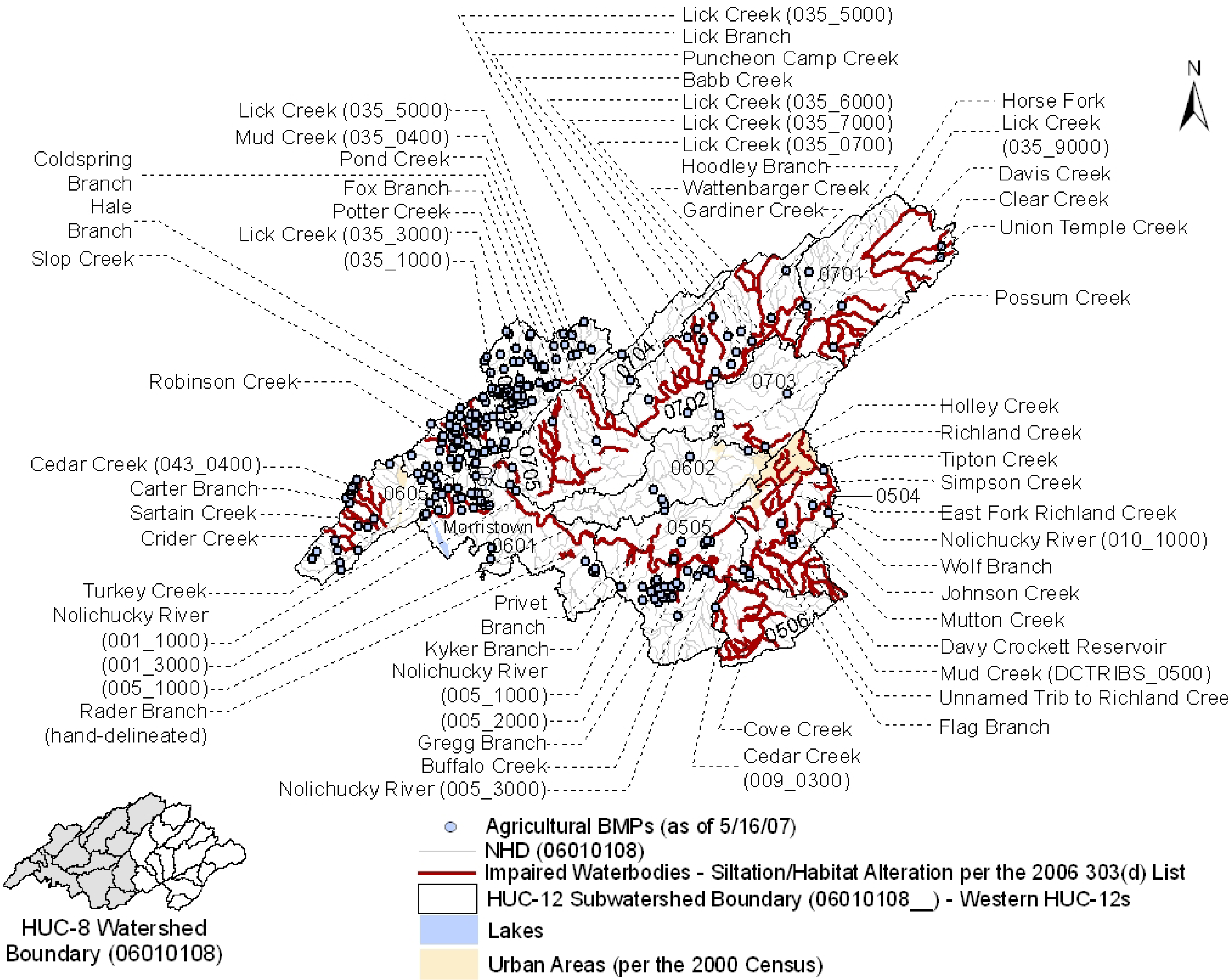
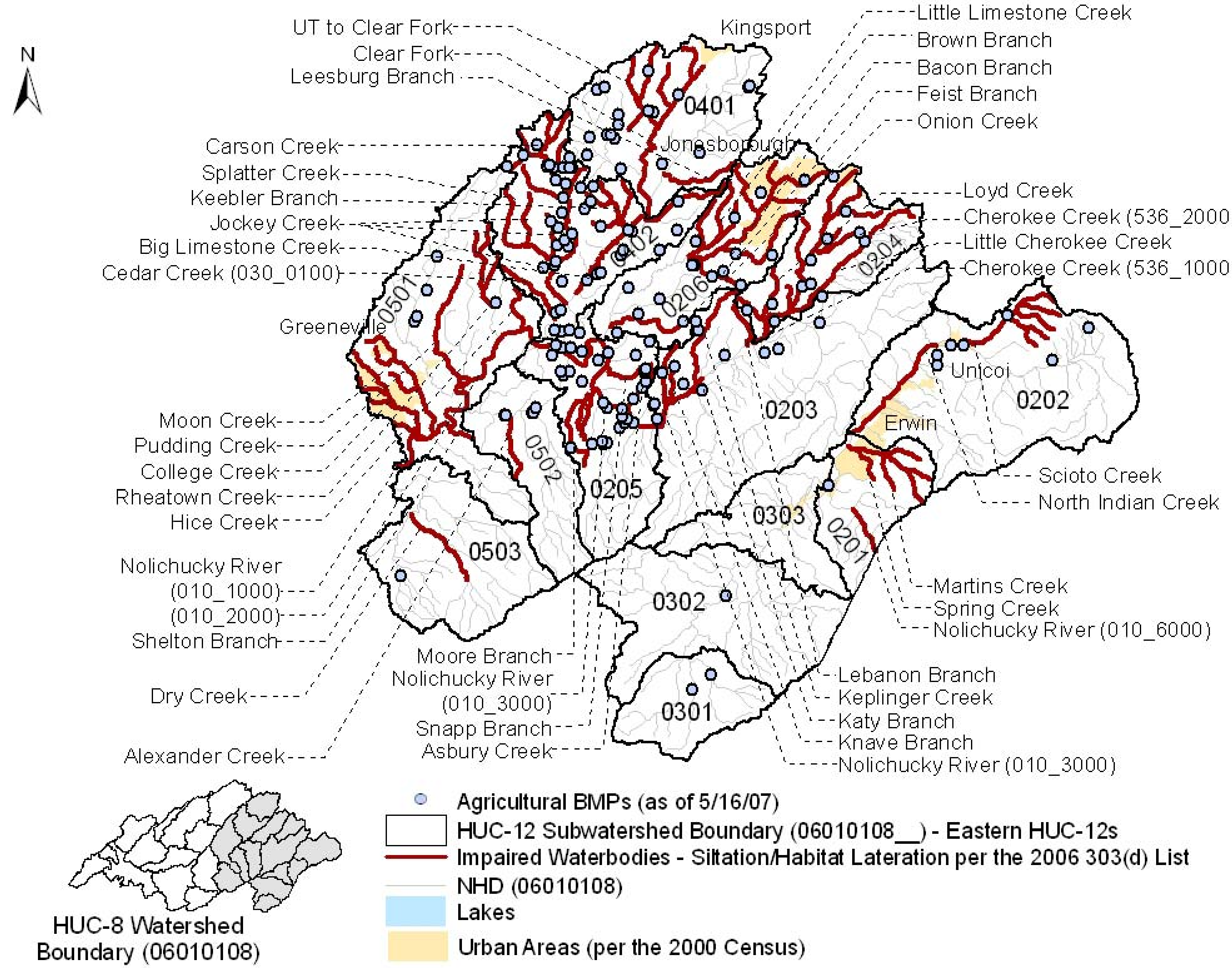


Figure 12 Location of Agricultural Best Management Practices in the Nolichucky River Watershed - Eastern HUC-12s



9.0 PUBLIC PARTICIPATION

In accordance with 40 CFR §130.7, the proposed sediment TMDLs for the Nolichucky River Watershed was placed on Public Notice for a 49-day period and comments solicited. Steps taken in this regard include:

1) Notice of the proposed TMDLs was posted on the Tennessee Department of Environment and Conservation website. The notice invited public and stakeholder comments and provided a link to a downloadable version of the TMDL document.

2) Notice of the availability of the proposed TMDLs (similar to the website announcement) was included in one of the NPDES permit Public Notice announcements, which was sent to approximately 200 interested persons or groups who have requested this information.

3) A letter was sent to following point source facilities in the Nolichucky River Watershed that are permitted to discharge treated total suspended solids (TSS) and are located in impaired subwatersheds advising them of the proposed sediment TMDLs and their availability on the TDEC website. The letter also stated that a written copy of the draft TMDL document would be provided on request. Letters were sent to the following facilities:

TNG110132	Greeneville Concrete Plant
TNG110215	Summers-Taylor (Greeneville Concrete Plant)
TNG110332	Summers-Taylor (Lowland Concrete Plant)
TNG110164	Summers-Taylor (Erwin Concrete Plant)
TN0027677	East Tennessee Zinc Co.
TN0054291	Short Mountain Silica
TN0060879	Vulcan Construction (Greeneville Quarry)
TN0065994	Vulcan Construction
TN0066010	Washington Co. Highway Dept
TN0066681	Vulcan Construction (Afton Quarry)
TN0068896	Vulcan Construction (Midway Quarry)
TN0072303	Nolichucky Sand Co.
TN0076201	Berry Hills Corp. (Quarry #1)

4) A letter was sent to identified water quality partners in the Nolichucky River Watershed advising them of the proposed sediment TMDLs and their availability on the TDEC website and invited comments. These partners included:

United States Forest Service
Natural Resources Conservation Service
United States Geological Survey Water Resources Programs – Tennessee District
Tennessee Valley Authority (TVA)
Tennessee Department of Agriculture
Upper Nolichucky Watershed Alliance
Middle Nolichucky Watershed Alliance

5) A draft copy of the proposed sediment TMDLs was sent to the following MS4s:

TNS075728	Jonesborough
TNS075710	Greeneville
TNS077763	Hamblen County
TNS075574	Hawkins County
TNS075787	Washington County
TNS077585	Tennessee Department of Transportation

No written comments were received during the Public Notice period.

10.0 FURTHER INFORMATION

Further information concerning Tennessee's TMDL program can be found on the Internet at the Tennessee Department of Environment and Conservation website:

http://www.state.tn.us/environment/wpc/tmdl/

Technical questions regarding these TMDLs should be directed to the following members of the Division of Water Pollution Control staff:

Bruce R. Evans, P.E., Watershed Management Section
E-mail: Bruce.Evans@state.tn.us

Sherry H. Wang, Ph.D., Watershed Management Section
E-mail: Sherry.Wang@state.tn.us

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