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4.0 EXISTING RESOURCE INFORMATION

4.1 Geologic, Hydrologic and Meteorological Conditions¹

The following geologic, hydrologic, and meteorological information is compiled from a variety of United States Geological Survey (USGS) and Virginia Department of Mines, Minerals, and Energy (DMME), formerly the Virginia Division of Mineral Resources, publications, and the National Oceanic and Atmospheric Administration (NOAA). Watershed information was retrieved through the United States Environmental Protection Agency (USEPA) Surf Your Watershed, Virginia Department of Conservation and Recreation (DCR) Soil and Water Conservation (SWC), United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and USGS Water Resources of the United States.

Physiographic Provinces

The West Piedmont Planning District, including Henry, Patrick, and Pittsylvania counties, is located in the Piedmont Physiographic Province of Virginia with a portion of western Patrick County located in the Blue Ridge Physiographic Province. This region is naturally divided into five geologically distinctive stratigraphic features separated by a thrust or normal fault: the Blue Ridge anticlinorium, the Smith River allochthon, the Sauratown Mountains anticlinorium, the Danville basin, and the Central Virginia volcanic-plutonic belt (Conley, 1985). The underlying geology affects the availability and quality of water resources.

Both the Blue Ridge and Piedmont provinces are primarily underlain by crystalline (igneous and metamorphic) rocks. Regolith, which consists of saprolite, colluvium, alluvium, and soil, overlies the crystalline rock throughout the region. Because of the varied nature of the regolith in thickness, composition, and grain size, its hydraulic properties also vary greatly. However, the regolith is more permeable than the underlying bedrock in which the only effective porosity is through fractures.

Recharge of aquifers is highly variable in the Blue Ridge and Piedmont provinces since it is primarily determined by local precipitation and runoff, which are influenced by both topography

¹ 9 VAC 25-780-90 A.

and surface infiltration. The western part of the Piedmont Province (spanning from North Carolina to central Virginia) is in the rain shadow of the Blue Ridge Mountains; this area receives less precipitation than other areas of Virginia. Well yields for all types of crystalline rocks are generally small; however, coarse-textured crystalline rocks, such as gneiss and schist generally yield more water than fine-grained metavolcanic rocks. Regardless, water is primarily transported through fracture zones in these types of rocks. The majority of water is stored in the regolith (thick or thin), from which water moves downward and is stored in bedrock fractures (which decrease with depth). The thicker the regolith, the greater the volume of water in storage, and the more likely the well can sustain its yield. Conversely, a well drilled in an area of thin regolith overlying crystalline rock is more likely to go dry during the summer months. Fracture traces or lineaments can often be identified using aerial photography to aid in siting higher yield wells.

The Piedmont Physiographic Province contains a diverse geology; therefore, there are wide variations in groundwater quality and yields. In areas with hard crystalline rocks, groundwater occurs in faults and fractures within 300 feet of the surface; well yields in such areas are typically 3 to 20 gpm. The quality of groundwater in areas of crystalline bedrock is generally good, although the groundwater locally may be acidic and have a high iron content. The pollution potential with such hydrogeology is moderate to low.

The Blue Ridge Physiographic Province (western Patrick County) is a relatively narrow, mountainous region underlain by granite, gneiss, and marble. The province is characterized by rapid surface runoff and low aquifer recharge. Groundwater use in the Blue Ridge is generally limited to domestic wells, which produce less than 20 gpm. The groundwater is typically of good quality although it may be locally high in iron, manganese, or sulfate content. The groundwater pollution potential in this area is low.

The crystalline and undifferentiated sedimentary rocks of the Piedmont and Blue Ridge aquifers generally have low dissolved solids contents; water is considered soft. The median hydrogen ion concentration, measured in pH units, is 6.7; therefore, the aquifers tend to be slightly acidic.

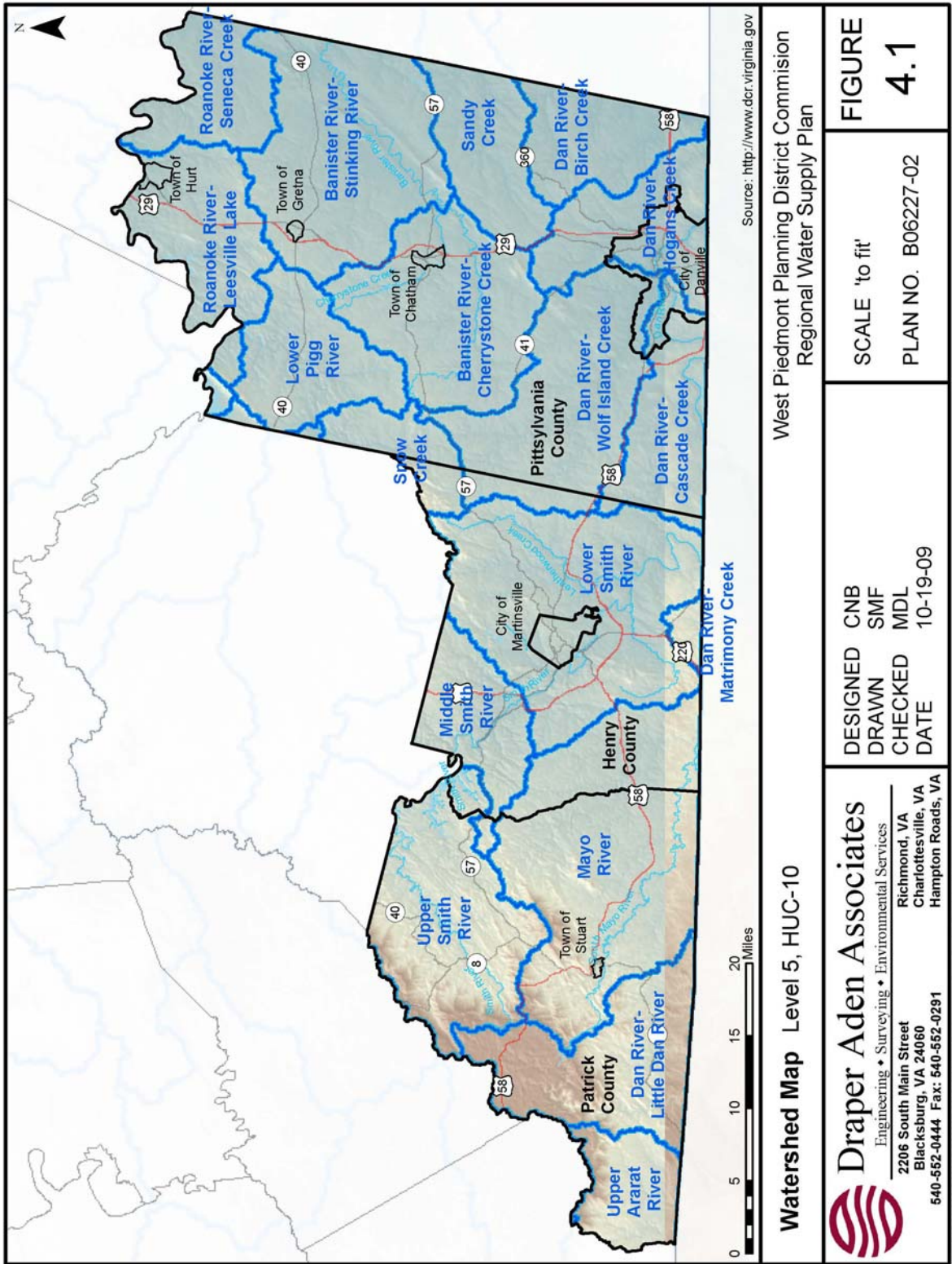
Regional Watersheds

The region is primarily located in the Roanoke River watershed, with a portion of western Patrick County located in the Yadkin watershed. Smaller watersheds and notable rivers and streams are discussed in the following sections. Watershed information was retrieved through the USEPA Surf Your Watershed, DCR SWC, USDA NRCS, and USGS Water Resources of the United States. Watersheds are defined by Hydrologic Unit Codes (HUC). Major watersheds are identified by 8-digit HUCs. Each 2-digit piece of the HUC identifies the watershed, region, sub-region, basin, and sub-basin. The major watersheds are divided into smaller watersheds with 10-digit HUCs (also known as level 5). Level 5 watersheds are the basis for natural resource planning. Sub-watersheds (level 6 or 12-digit HUCs) help identify water sources such as rivers and streams that contribute within a watershed. Level 5 or 10-digit HUC watersheds are presented for the region in Figure 4.1.

Meteorological Data

Meteorological information was reviewed through the NOAA Satellite and Information Service, National Environmental Satellite, Data, and Information Service (NESDIS). The publication *Climatology of the United States No. 81, Monthly Station Normals of Temperature, precipitation, and Heating and Cooling Degree Days 1971-2000* (NOAA, 2002) for the Commonwealth of Virginia is referenced where appropriate in the following sections. Normals are 30-year arithmetic means, computed once per decade.

Figure 4.1: WPPDC Regional Watershed Map



Watershed Map Level 5, HUC-10

West Piedmont Planning District Commission
Regional Water Supply Plan

Source: <http://www.dcr.virginia.gov>



Draper Aden Associates
Engineering • Surveying • Environmental Services
2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
Richmond, VA
Charlottesville, VA
Hampton Roads, VA

DESIGNED CNB
DRAWN SMF
CHECKED MDL
DATE 10-19-09

SCALE 'to fit'
PLAN NO. B06227-02

FIGURE 4.1

File: P:\B06227\B06227-02\GIS\Maps_Environment\Final Draft - Fig-4.1 - Watershed Map.mxd

4.2 Henry County Including the City of Martinsville and the Town of Ridgeway

Geology

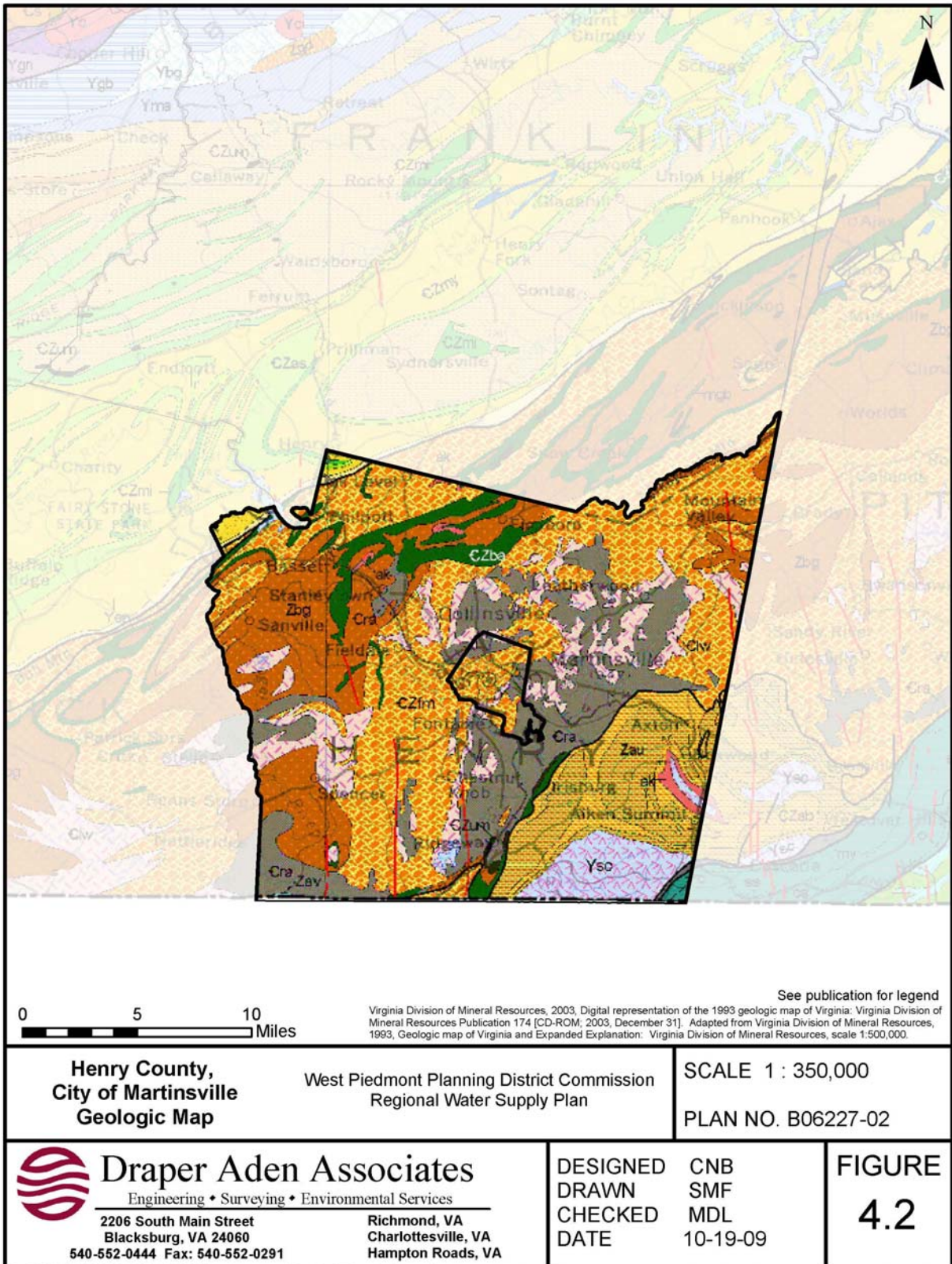
Henry County is located in the Piedmont Physiographic Province. A geologic map of Henry County is included as Figure 4.2. Rock types from the Smith River Allochthon, the Sauratown Mountains Anticlinorium, and the Danville Basin are found in Henry County. The Smith River Allochthon is an allochthonous (i.e., transported) mass that occupies a broad synform between the Blue Ridge Anticlinorium and the Sauratown Mountains Anticlinorium underlain by Lynchburg and Grenville basement rocks. The rocks are composed of Late Precambrian metasedimentary sequences of metavolcanic rocks and Early Paleozoic and Ordovician age plutonic-igneous sequences that intrude the metasedimentary deposits. The Sauratown Mountains Anticlinorium includes Grenville-age basement rocks overlain by Late Precambrian metasedimentary rocks. The Danville Basin is a northeast trending structure composed of continent derived, clastic sedimentary rocks that are correlated with early Late Triassic age rocks (based on fossil identification).

Hydrology

Henry County lies entirely within the Roanoke River Basin and is drained by five major rivers. The Smith River drains most of the northern, central and southern parts of the County with a drainage area of 294 square miles. The north and south forks of the Mayo River drain the western and southwestern sections of the County (57 square miles). The Pigg River drains the extreme northeastern tip of the County (22 square miles) and the Dan River drains a small part of eastern Henry County (12 square miles).

Beaver Creek is impounded about two miles north of Martinsville to form the Martinsville Reservoir. This reservoir furnishes most of the potable water to the City of Martinsville. The Smith River is impounded in the extreme northwest section of the County to form Philpott Reservoir, a 3,000 acre lake used for recreational activities, hydroelectric power and flood control. Philpott Reservoir is the largest impoundment in Henry County even though most of it lies in Patrick and Franklin counties.

Figure 4.2: Geologic map of Henry County



Meteorological Conditions

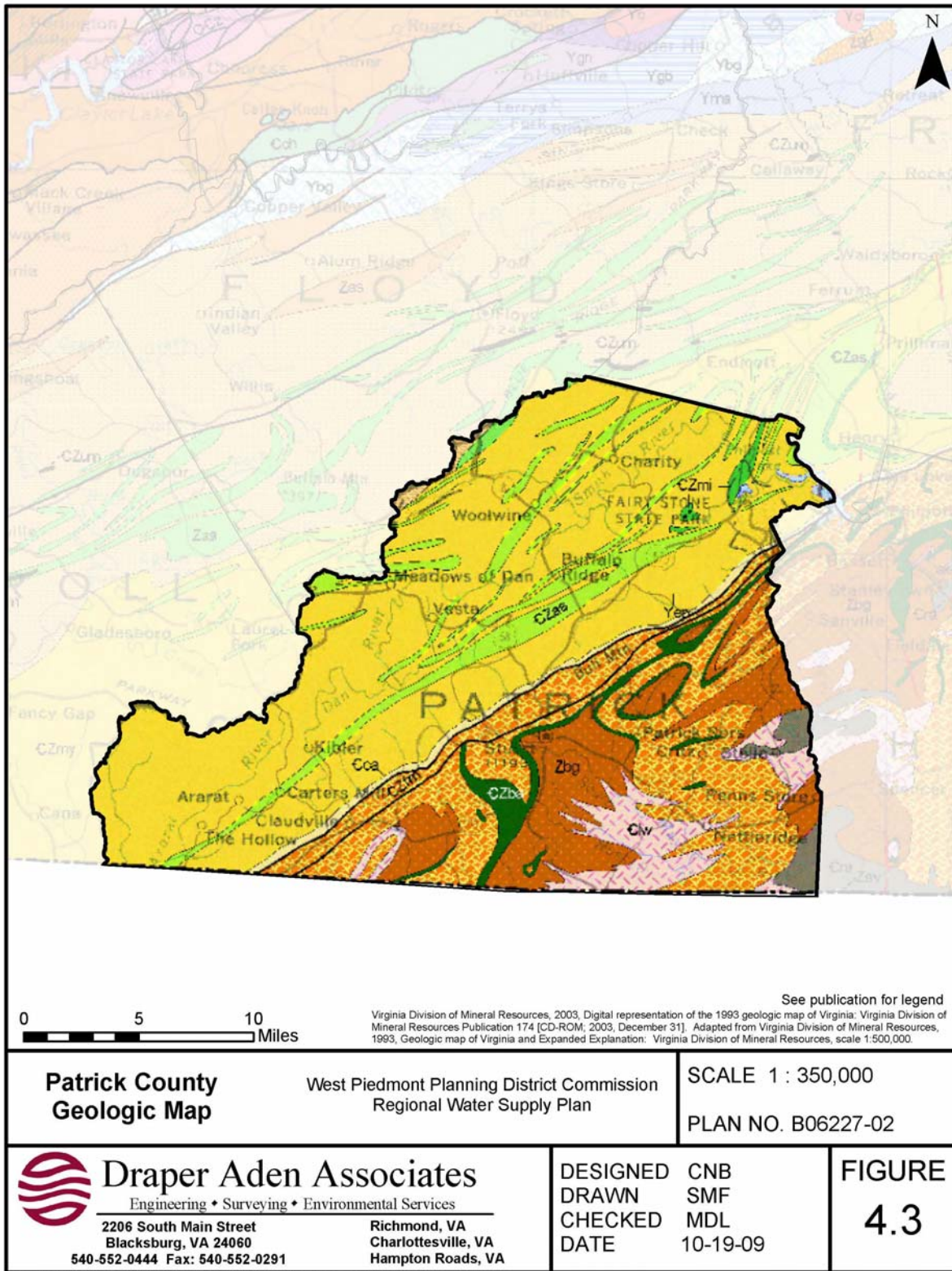
Henry County's climate is typical for south-central Virginia: hot, humid summers and cool, rainy winters with some snow. Two NOAA monitoring stations are located in Henry County including the Philpott Dam location on the Franklin County/Henry County boundary and the Martinsville Filter Plant. The mean annual temperature at the Martinsville station is 54.5 degrees Fahrenheit (°F) with an annual average high of 68.1°F and an average annual low of 40.9°F. Similarly, the Philpott Dam Station lists an annual mean of 56.4°F with an annual average high of 67.8°F and an average annual low of 44.9°F. Highest temperatures are generally documented in July and the lowest temperatures in January. The average annual precipitation ranges from 40.61 inches to 50.33 inches with the greatest precipitation documented in late spring and summer.

4.3 Patrick County Including the Town of Stuart

Geology

Patrick County is situated in two major physiographic provinces: the Blue Ridge and Piedmont. A geologic map of Patrick County is included as Figure 4.3. Rock types from the Blue Ridge Anticlinorium and the Smith River Allochthon are found in Patrick County. The Blue Ridge Anticlinorium includes Late Precambrian igneous and metamorphic rocks from two major groups: the Lynchburg Group and the Candler Formation. These groups overlie the Grenville basement rocks that represent the core of the anticlinorium. The Smith River Allochthon is an allochthonous (i.e., transported) mass that occupies a broad synform between the Blue Ridge Anticlinorium and the Sauratown Mountains Anticlinorium underlain by Lynchburg and Grenville basement rocks. The rocks are composed of Late Precambrian metasedimentary sequences of metavolcanic rocks and Early Paleozoic and Ordovician age plutonic-igneous sequences that intrude the metasedimentary deposits.

Figure 4.3: Geologic map of Patrick County



Hydrology

Patrick County is mainly located in the Upper Dan River watershed with a small area in the southwest portion of the county in the Upper Yadkin watershed.

The Smith River is impounded to form the Philpott Reservoir, which lies within Patrick, Henry, and Franklin County and is used for recreational activities, hydroelectric power and flood control.

Meteorological Conditions

Patrick County's climate is typical for south-central Virginia: hot, humid summers and cool, rainy winters with some snow. Three NOAA monitoring stations are located in Patrick County at the Meadows of Dan, Stuart, and Woolwine Stations. Temperature normals were not available for the Meadows of Dan or Woolwine Stations. The mean annual temperature at the Stuart Station is documented at 55.5°F with an average annual high of 66.3°F and an average annual low of 44.7°F. Highest temperatures are generally documented in July and the lowest temperatures in January. Annual precipitation ranges from 51.35 inches to 55.79 inches with the greatest precipitation documented in late spring and summer.

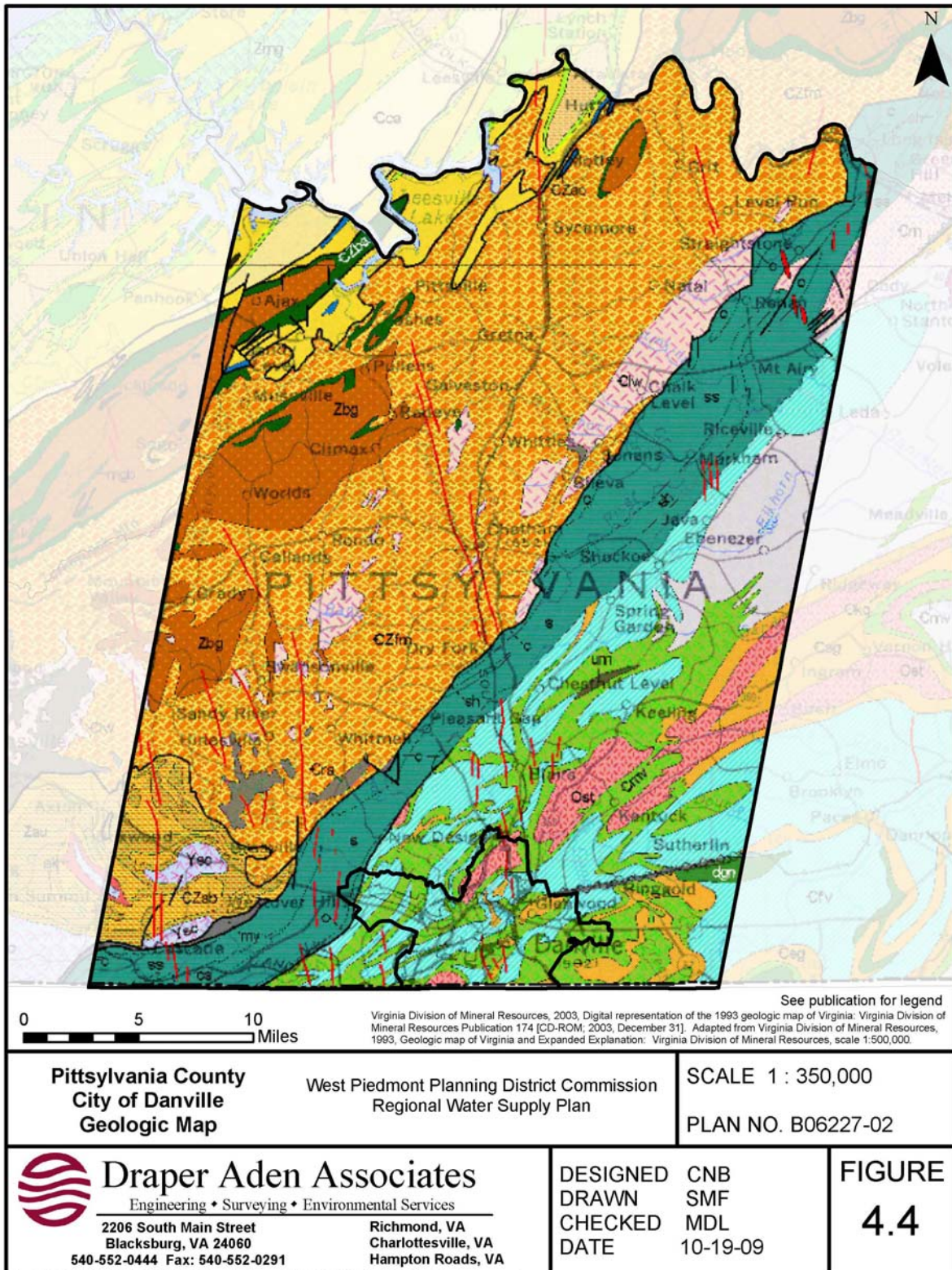
4.4 Pittsylvania County Including the City of Danville and Towns of Chatham, Gretna, and Hurt

Geology

Pittsylvania County is situated in the Piedmont Physiographic Province. A geologic map of Patrick County is included as Figure 4.4. Rock types from the Smith River Allochthon, the Sauratown Mountains Anticlinorium, the Danville Basin, and the Central Virginia volcanic-plutonic belt are found in Pittsylvania County. The Smith River Allochthon is an allochthonous mass that occupies a broad synform between the Blue Ridge Anticlinorium and the Sauratown Mountains Anticlinorium underlain by Lynchburg and Grenville basement rocks. The rocks are composed of Late Precambrian metasedimentary sequences of metavolcanic rocks and Early Paleozoic and Ordovician age plutonic-igneous sequences that intrude the metasedimentary deposits. The Sauratown Mountains Anticlinorium includes Grenville-age basement rocks overlain by Late Precambrian metasedimentary rocks. The Danville Basin is a northeast trending

structure composed of continent derived, clastic sedimentary rocks that are correlated with early Late Triassic age rocks (based on fossil identification). The Central Virginia volcanic-plutonic belt is a sequence of felsic and mafic metavolcanic rocks that contain interlayered metasedimentary rocks. The Cole Hill Uranium deposit, one of the largest deposits in the country, is located approximately six miles northeast of the Town of Chatham in Pittsylvania County.

Figure 4.4: Geologic map of Pittsylvania County



Hydrology

Pittsylvania County is located in the Upper Roanoke, Banister, Upper Dan, and Lower Dan watersheds. The Dan and Staunton Rivers provide an abundance of surface water for the County. In addition, there are numerous small rivers and creeks, including the Pigg, Banister, Stinking, and Sandy Rivers, and the Cherrystone, Elkhorn, George's, Straightstone, Reed, Sycamore, and Whitehorn Creeks. There are also numerous lakes and water impoundments throughout the County. The two most significant are the Smith Mountain and Leesville Lake Reservoirs, which are hydroelectric impoundments of 20,000 acres and 2,400 acres, respectively, on the Roanoke (Staunton) River.

Meteorological Conditions

Pittsylvania County's climate is typical for south-central Virginia: hot, humid summers and cool, rainy winters with some snow. Two NOAA monitoring stations are located in Pittsylvania County at the Chatham and Danville Stations. The mean annual temperature at the Chatham station is 54.9°F with an annual average high of 68.1°F and an average annual low of 41.6°F. Similarly, the Danville Station lists an annual mean of 57.9°F with an annual average high of 70.0°F and an average annual low of 45.8°F. Highest temperatures are generally documented in July and the lowest temperatures in January. The average annual precipitation ranges from 44.98 inches to 45.28 inches with the greatest precipitation documented in late spring and summer.

4.5 Existing Environmental Conditions that Pertain to or May Affect In-Stream Flow , In-Stream Uses, and Sources that Provide the Current Supply²

Environmental conditions that may affect use of surface water sources include threatened and endangered species, habitats of concern, significant fish species, recreational river segments, historical and archaeological sites, unusual geologic site or special soil types, wetlands, riparian buffers and conservation easements, land use patterns, impaired streams, point source discharges, and other threats to water quantity and quality.

² 9 VAC 25-780-90 B.

4.6 State or Federal Listed Threatened or Endangered Species or Habitats of Concern

Information on state or federal listed threatened and endangered species or habitats of concern for the region was collected from the Virginia Fish and Wildlife Information Service (VAFWIS). Species are listed as federal endangered (FE), federal threatened (FT), federal candidate (FC), federal species of concern (FS), state endangered (SE), state threatened (ST), and state special concern (SS). Federal species of concern and state special concern are not legal status and the list is maintained by the United States Fish & Wildlife Service (USFWS) Virginia Field Office. Tables 4.6.1, 4.6.2, 4.6.3, 4.6.4, and 4.6.5 summarize state and/or federal listed threatened or endangered species in Henry County including the Town of Ridgeway; Patrick County including the Town of Stuart; Pittsylvania County including the Towns of Chatham, Gretna, and Hurt; City of Danville; and City of Martinsville, respectively.

Table 4.6.1: State or Federal Listed Threatened or Endangered Species in Henry County.

BOVA Code	Common Name	Scientific Name	Status
010214	Loggerhead, Roanoke	<i>Percina rex</i>	FE,SE
010110	Jumprock, bigeye	<i>Scartomyzon (= Moxostoma) ariommus (= ariommum)</i>	FS
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS
040292	Shrike, migrant loggerhead	<i>Lanius ludovicianus migrans</i>	ST
040293	Shrike, loggerhead	<i>Lanius ludovicianus</i>	ST
040262	Nuthatch, red-breasted	<i>Sitta canadensis</i>	SS
040266	Wren, winter	<i>Troglodytes troglodytes</i>	SS
040210	Owl, long-eared	<i>Asio otus</i>	SS
040032	Egret, great	<i>Ardea alba egretta</i>	SS
040094	Harrier, northern	<i>Circus cyaneus</i>	SS
040112	Moorhen, common	<i>Gallinula chloropus cachinnans</i>	SS
040189	Tern, Caspian	<i>Sterna caspia</i>	SS
040204	Owl, barn	<i>Tyto alba pratincola</i>	SS
040264	Creeper, brown	<i>Certhia americana</i>	SS
040278	Thrush, hermit	<i>Catharus guttatus</i>	SS
040314	Warbler, magnolia	<i>Dendroica magnolia</i>	SS
040285	Kinglet, golden-crowned	<i>Regulus satrapa</i>	SS
040364	Dickcissel	<i>Spiza americana</i>	SS
040366	Finch, purple	<i>Carpodacus purpureus</i>	SS
050045	Otter, northern river	<i>Lontra canadensis lataxina</i>	SS

Table 4.6.2: State or Federal Listed Threatened or Endangered Species in Patrick County.

BOVA Code	Common Name	Scientific Name	Status
010214	Logperch, Roanoke	<i>Percina rex</i>	FE,SE
030061	Turtle, bog (= Muhlenberg)	<i>Clemmys</i> (= <i>Glyptemys</i>) <i>muhlenbergii</i>	FT, SE
010110	Jumprock, bigeye	<i>Scartomyzon</i> (= <i>Moxostoma</i>) <i>ariommus</i> (= <i>ariommum</i>)	FS
010115	Sucker, rustyside	<i>Thoburnia</i> (= <i>Moxostoma</i>) <i>hamiltoni</i>	SS
010127	Madtom, orangefin	<i>Noturus gilberti</i>	FS, ST
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS
040292	Shrike, migrant loggerhead	<i>Lanius ludovicianus migrans</i>	ST
100001	Fritillary, Diana	<i>Speyeria diana</i>	FS
100248	Fritillary, regal	<i>Speyeria idalia idalia</i>	FS
110242	Xystodesmid, Laurel Creek	<i>Sigmoria whiteheadi</i>	FS, ST
040293	Shrike, loggerhead	<i>Lanius ludovicianus</i>	ST
040096	Falcon, peregrine	<i>Falco peregrinus</i>	ST
040189	Tern, Caspian	<i>Sterna caspia</i>	SS
040112	Moorhen, common	<i>Gallinula chloropus cachinnans</i>	SS
040032	Egret, great	<i>Ardea alba egretta</i>	SS
040204	Owl, barn	<i>Tyto alba pratincola</i>	SS
040262	Nuthatch, red-breasted	<i>Sitta canadensis</i>	SS
040266	Wren, winter	<i>Troglodytes troglodytes</i>	SS
040264	Creeper, brown	<i>Certhia americana</i>	SS
040278	Thrush, hermit	<i>Catharus guttatus</i>	SS
040285	Kinglet, golden-crowned	<i>Regulus satrapa</i>	SS
040304	Warbler, Swainson's	<i>Limnothlypis swainsonii</i>	SS
040306	Warbler, golden-winged	<i>Vermivora chrysoptera</i>	SS
040314	Warbler, magnolia	<i>Dendroica magnolia</i>	SS
040366	Finch, purple	<i>Carpodacus purpureus</i>	SS
050110	Mole, star-nosed	<i>Condylura cristata parva</i>	SS
050045	Otter, northern river	<i>Lontra canadensis lataxina</i>	SS
040094	Harrier, northern	<i>Circus cyaneus</i>	SS
040364	Dickcissel	<i>Spiza americana</i>	SS

Table 4.6.3: State or Federal Listed Threatened or Endangered Species in Pittsylvania County

BOVA Code	Common Name	Scientific Name	Status
010214	Logperch, Roanoke	<i>Percina rex</i>	FE,SE
040093	Eagle, bald	<i>Haliaeetus leucocephalus</i>	FS,ST
010110	Jumprock, bigeye	<i>Scartomyzon</i> (= <i>Moxostoma</i>) <i>ariommus</i> (= <i>ariommum</i>)	FS
010115	Sucker, rustyside	<i>Thoburnia</i> (= <i>Moxostoma</i>) <i>hamiltoni</i>	SS
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS
040292	Shrike, migrant loggerhead	<i>Lanius ludovicianus migrans</i>	ST
110240	Supercoil, spirit	<i>Paravitra hera</i>	FS, SE
040293	Shrike, loggerhead	<i>Lanius ludovicianus</i>	ST
010129	Sandpiper, updland	<i>Bartramia longicauda</i>	ST
040094	Harrier, northern	<i>Circus cyaneus</i>	SS
040036	Night-heron, yellow-crowned	<i>Nyctanassa violacea violacea</i>	SS
010394	Killfish, speckled	<i>Fundulus rathbuni</i>	SS
040264	Creeper, brown	<i>Certhia americana</i>	SS

BOVA Code	Common Name	Scientific Name	Status
040278	Thrush, hermit	<i>Catharus guttatus</i>	SS
040314	Warbler, magnolia	<i>Dendroica magnolia</i>	SS
040032	Egret, great	<i>Ardea alba egretta</i>	SS
040189	Tern, Caspian	<i>Sterna caspia</i>	SS
040112	Moorhen, common	<i>Gallinula chloropus cachinnans</i>	SS
040262	Nuthatch, red-breasted	<i>Sitta canadensis</i>	SS
040266	Wren, winter	<i>Troglodytes troglodytes</i>	SS
040366	Finch, purple	<i>Carpodacus purpureus</i>	SS
050045	Otter, northern river	<i>Lontra canadensis lataxina</i>	SS
040285	Kinglet, golden-crowned	<i>Regulus satrapa</i>	SS
040364	Dickcissel	<i>Spiza americana</i>	SS
040204	Owl, barn	<i>Tyto alba pratincola</i>	SS

Table 4.6.4: State or Federal Listed Threatened or Endangered Species in the City of Danville.

BOVA Code	Common Name	Scientific Name	Status
040292	Shrike, migrant loggerhead	<i>Lanius ludovicianus migrans</i>	ST
040293	Shrike, loggerhead	<i>Lanius ludovicianus</i>	ST
040266	Wren, winter	<i>Troglodytes troglodytes</i>	SS
040278	Thrush, hermit	<i>Catharus guttatus</i>	SS
040285	Kinglet, golden-crowned	<i>Regulus satrapa</i>	SS
040112	Moorhen, common	<i>Gallinula chloropus cachinnans</i>	SS
040189	Tern, Caspian	<i>Sterna caspia</i>	SS
040262	Nuthatch, red-breasted	<i>Sitta canadensis</i>	SS
040264	Creeper, brown	<i>Certhia americana</i>	SS
040204	Owl, barn	<i>Tyto alba pratincola</i>	SS
040032	Egret, great	<i>Ardea alba egretta</i>	SS
040094	Harrier, northern	<i>Circus cyaneus</i>	SS
040314	Warbler, magnolia	<i>Dendroica magnolia</i>	SS
040364	Dickcissel	<i>Spiza americana</i>	SS
040366	Finch, purple	<i>Carpodacus purpureus</i>	SS
050045	Otter, northern river	<i>Lontra Canadensis lataxina</i>	SS

Table 4.6.5: State or Federal Listed Threatened or Endangered Species in the City of Martinsville.

BOVA Code	Common Name	Scientific Name	Status
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS
040292	Shrike, migrant loggerhead	<i>Lanius ludovicianus migrans</i>	ST
040293	Shrike, loggerhead	<i>Lanius ludovicianus</i>	ST
040314	Warbler, magnolia	<i>Dendroica magnolia</i>	SS
040364	Dickcissel	<i>Spiza americana</i>	SS
040285	Kinglet, golden-crowned	<i>Regulus satrapa</i>	SS
040262	Nuthatch, red-breasted	<i>Sitta canadensis</i>	SS
040204	Owl, barn	<i>Tyto alba pratincola</i>	SS
040266	Wren, winter	<i>Troglodytes troglodytes</i>	SS
040264	Creeper, brown	<i>Certhia americana</i>	SS
040278	Thrush, hermit	<i>Catharus guttatus</i>	SS

BOVA Code	Common Name	Scientific Name	Status
040210	Owl, long-eared	<i>Asio otus</i>	SS
040032	Egret, great	<i>Ardea alba egretta</i>	SS
040094	Harrier, northern	<i>Circus cyaneus</i>	SS
040112	Moorhen, common	<i>Gallinula chloropus cachinnans</i>	SS
040189	Tern, Caspian	<i>Sterna caspia</i>	SS
040366	Finch, purple	<i>Carpodacus purpureus</i>	SS
050045	Otter, northern river	<i>Lontra canadensis lataxina</i>	SS

Source: <http://vafwis.org/fwis/?Menu=Home.Species+Information> March 16, 2009.

Information on state listed threatened and endangered plant species was collected from the DCR, Division of Natural Heritage (DNH) and the USDA NRCS. Table 4.6.6 summarizes federal and state listed threatened or endangered plant species for the Commonwealth of Virginia.

Table 4.6.6: State or Federal Listed Threatened or Endangered Plant Species.

County	Common Name	Scientific Name	Status
Patrick	Streambank Bittercress	<i>Cardamine micranthera</i>	FE
Pittsylvania	Small Whorled Pogonia	<i>Isotria medeoloides</i>	FT/SE
Pittsylvania	Leechbrush	<i>Nestonia umbellula</i>	SE

Source: <http://www.plants.usda.gov/threat.html> March 16, 2009.

Source: http://www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml March 16, 2009.

4.7 Anadromous Trout and Other Significant Fisheries

No anadromous fish species are present in the region. Trout and other significant fish species identified and recorded by the Virginia Department of Game and Inland Fisheries (VDGIF) are found in waterways throughout the region. Fish species are given Game, Sport, and Pest/Nuisance designations, where appropriate. No Game or Pest/Nuisance fishes were identified in the region. Additional designations are given under the Virginia Wildlife Action Plan, which determines noted levels of conservation need from moderate (level IV) to critical (level I) beyond the threatened and endangered listings.

In Henry County, 50 fish species are recorded, 20 of which are sport fish. Patrick County has 51 fish species recorded of which 15 are considered sport fish. 59 recorded fish species are found in Pittsylvania County with 23 of those identified as sport fish. Designated sport fish for Henry County, Patrick County, and Pittsylvania County are presented in Tables 4.7.1, 4.7.2, and 4.7.3, respectively.

Table 4.7.1 Sport Fish Species in Henry County

BOVA Code	Common Name	Scientific Name	Status/WAP
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS/II
010038	Alewife	<i>Alosa pseudoharengus</i>	IV
010188	Bass, largemouth	<i>Micropterus salmoides</i>	
010175	Bass, rock	<i>Ambloplites rupestris</i>	
010186	Bass, smallmouth	<i>Micropterus dolomieu</i>	
010183	Bluegill	<i>Lepomis macrochirus</i>	
010123	Bullhead, brown	<i>Ameiurus nebulosus</i>	
010124	Bullhead, flat	<i>Ameiurus platycephalus</i>	
010062	Carp, common	<i>Cyprinus carpio</i>	
010125	Catfish, channel	<i>Ictalurus punctatus</i>	
010190	Crappie, black	<i>Pomoxis nigromaculatus</i>	
010189	Crappie, white	<i>Pomoxis annularis</i>	
010182	Pumpkinseed	<i>Lepomis gibbosus</i>	
010105	Sucker, white	<i>Catostomus commersoni</i>	
010181	Sunfish, green	<i>Lepomis cyanellus</i>	
010180	Sunfish, redbreast	<i>Lepomis auritus</i>	
010052	Trout, brook	<i>Salvelinus fontinalis</i>	
010051	Trout, brown	<i>Salmo trutta</i>	
010050	Trout, rainbow	<i>Oncorhynchus mykiss</i>	
010177	Warmouth	<i>Lepomis gulosus</i>	

Table 4.7.2 Sport Fish Species in Patrick County

BOVA Code	Common Name	Scientific Name	Status/WAP
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS/II
010188	Bass, largemouth	<i>Micropterus salmoides</i>	
010175	Bass, rock	<i>Ambloplites rupestris</i>	
010186	Bass, smallmouth	<i>Micropterus dolomieu</i>	
010183	Bluegill	<i>Lepomis macrochirus</i>	
010124	Bullhead, flat	<i>Ameiurus platycephalus</i>	
010062	Carp, common	<i>Cyprinus carpio</i>	
010125	Catfish, channel	<i>Ictalurus punctatus</i>	
010182	Pumpkinseed	<i>Lepomis gibbosus</i>	
010105	Sucker, white	<i>Catostomus commersoni</i>	
010180	Sunfish, redbreast	<i>Lepomis auritus</i>	
010052	Trout, brook	<i>Salvelinus fontinalis</i>	
010051	Trout, brown	<i>Salmo trutta</i>	
010050	Trout, rainbow	<i>Oncorhynchus mykiss</i>	
010177	Warmouth	<i>Lepomis gulosus</i>	

Table 4.7.3 Sport Fish Species in Pittsylvania County

BOVA Code	Common Name	Scientific Name	Status/WAP
010174	Bass, Roanoke	<i>Ambloplites cavifrons</i>	SS/II
010038	Alewife	<i>Alosa pseudoharengus</i>	IV
010188	Bass, largemouth	<i>Micropterus salmoides</i>	
010186	Bass, smallmouth	<i>Micropterus dolomieu</i>	
010168	Bass, striped	<i>Morone saxatilis</i>	
010183	Bluegill	<i>Lepomis macrochirus</i>	
010123	Bullhead, brown	<i>Ameiurus nebulosus</i>	
010124	Bullhead, flat	<i>Ameiurus platycephalus</i>	
010062	Carp, common	<i>Cyprinus carpio</i>	
010125	Catfish, channel	<i>Ictalurus punctatus</i>	
010120	Catfish, white	<i>Ameiurus catus</i>	
010190	Crappie, black	<i>Pomoxis nigromaculatus</i>	
010189	Crappie, white	<i>Pomoxis annularis</i>	
010056	Pickerel, chain	<i>Esox niger</i>	
010055	Pickerel, redbfin	<i>Esox americanus americanus</i>	
010182	Pumpkinseed	<i>Lepomis gibbosus</i>	
010116	Redhorse, shorthead	<i>Moxostoma macrolepidotum</i>	
010105	Sucker, white	<i>Catostomus commersoni</i>	
010181	Sunfish, green	<i>Lepomis cyanellus</i>	
010180	Sunfish, redbreast	<i>Lepomis auritus</i>	
010216	Walleye	<i>Sander vitreus vitreus</i>	
010177	Warmouth	<i>Lepomis gulosus</i>	

Source: <http://vafwis.org/fwis/?Menu=Home.Species+Information> March 16, 2009.

4.8 River Segments that have Recreational Significance including Scenic River Status

Information on river segments with recreation significance, including state scenic river status, was collected from DCR. DCR has established the Virginia Scenic River System. The intent of this program is to identify, designate and help protect rivers and streams that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance for future generations. A focus of the program is to enhance the conservation and wise use of scenic rivers and their attendant corridors. Based on a review of the Scenic Rivers Map of Virginia, segments of the following (see table below) are designated or potential scenic rivers. A river component identified as desirable is one that has been evaluated and found worthy of the scenic designation, but has not been legislatively designated. A river component identified as potential is one that has been identified as being worthy of future study. A map showing scenic rivers in the region is included as Figure 4.8.

Figure 4.8: Map Showing Scenic Rivers in the Region

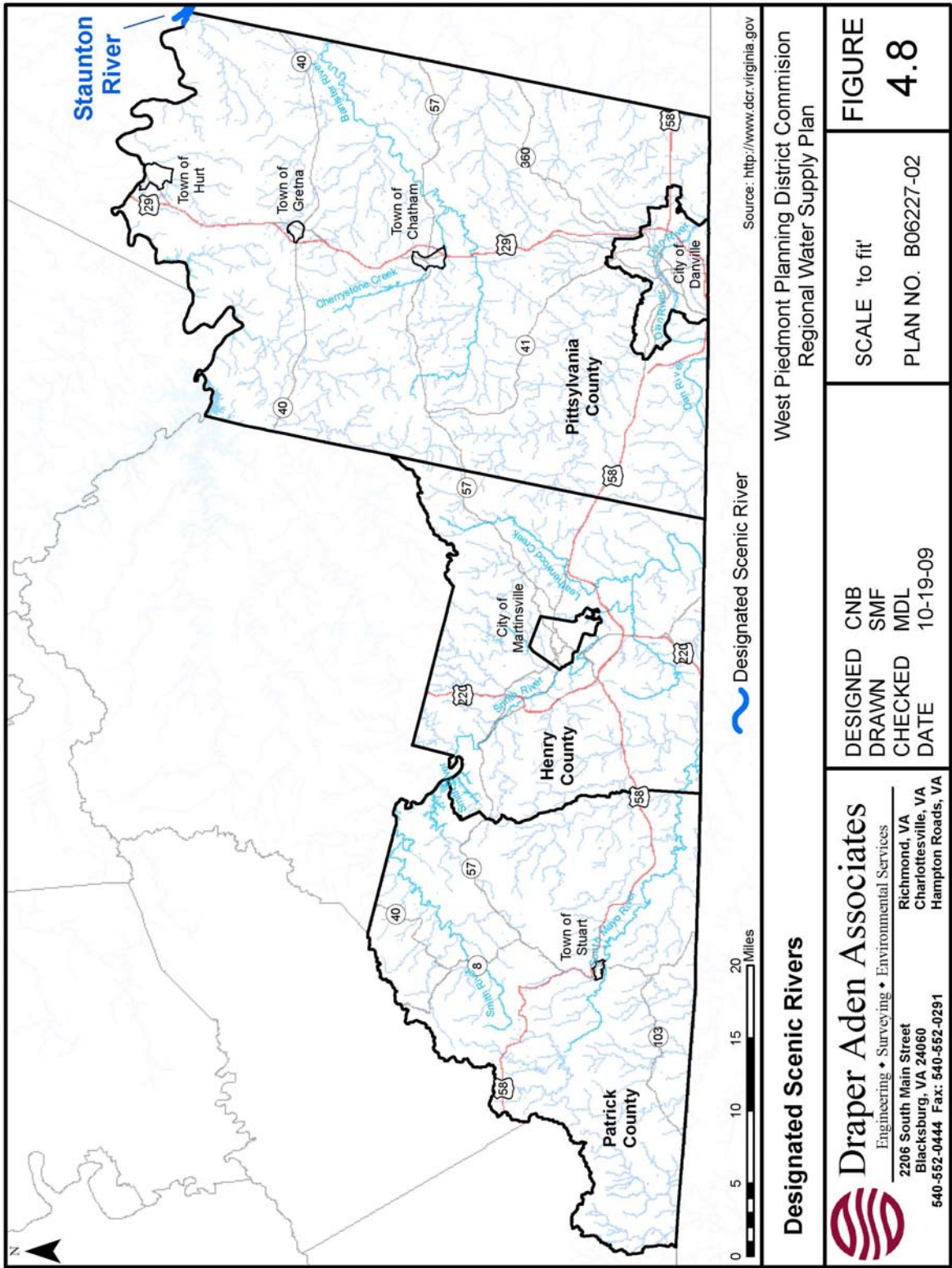


Table 4.8.1 Virginia’s Scenic Rivers

River	Designated Reach	City/County	Status
Dan River	Entire River in Virginia	Pittsylvania County	Potential
North Mayo River	Route 695 to VA-NC line	Henry County	Desirable
Sandy River	Pittsylvania County	Pittsylvania County	Potential
Smith River	Confluence with Reds Creek to VA-NC line	Henry County	Desirable
Smith River	Route 704 to Philpott Reservoir	Patrick County	Desirable
Smith River	Route 8 to Route 704	Patrick County	Potential
South Mayo River	Stuart to VA-NC line	Henry County/Patrick County	Desirable

Source: http://www.dcr.virginia.gov/recreational_planning/srmain.shtml March 23, 2009.

Additionally, the NPS maintains a Nationwide Rivers Inventory as part of the Rivers, Trails, and Conservation Assistance Program. The list of Virginia Segments with noted significance includes the following river segments.

Table 4.8.2 Rivers, Trails & Conservation Program River Segments

River	Locality	Year Listed	Significance
Dan River	Patrick County	1982	Recreational Geologic
Dan River	Patrick County	1982	Scenic Ecologic
Dan River	Pittsylvania County	1982	Recreational
Roanoke River	Pittsylvania County	1982	Geologic Historic

Source: <http://www.nps.gov/ncrc/programs/rtca/nri/states/va.html>. Modified March 23, 2009.

4.9 Sites of Historic or Archeological Significance

The National Register of Historic Places (NRHP) is the Nation’s official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act (NHPA) of 1966, the NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate and protect historic and archaeological resources. Properties listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture.

The Virginia Department of Historic Resources (VDHR) protects Virginia’s significant historic, architectural, archaeological, and cultural resources. Under Federal Law, a historic property is any district, site, building, structure, or object that meets the criteria for listing on the NRHP. The National Register is a list established by the NHPA of 1966, as amended, to recognize properties for their significance in history, architecture, archaeology, engineering, or culture.

Under State Law, a historic property is any district, site, building, structure, or object designated by the Virginia Board of Historic Resources for listing on the Virginia Landmarks Register (VLR). The criteria are the same as those used for the National Register.

The VLR, established in 1966, is managed by DHR. It is the State’s official list of properties important to Virginia’s history. The same criteria used by the DHR are used to evaluate resources for inclusion in the VLR.

The following tables summarize historic sites in the region.

Table 4.9.1 Summary of Historic Sites in Henry County

Name of Historic Site	City/Town	Quadrangle	VLR Listing	NRHP Listing	NRHP File #
Martinsville Fish Dam	Martinsville	Martinsville East	9/18/73	1/21/74	044-0086
Bellevue	Ridgeway	Price	5/21/74	6/10/74	044-0002
Stoneleigh	Stanleytown	Martinsville West	3/16/82	11/24/82	044-0087
Beaver Creek Plantation	Martinsville	Martinsville West	4/16/85	5/9/85	044-0001
Ingleside	Ridgeway	NW Eden	6/16/99	8/5/99	044-0013
Eltham Manor	Bassett	Martinsville West	6/16/99	8/5/99	044-5011
Virginia Home	Fieldale	Martinsville West	3/15/00	5/24/00	044-5010
Grassdale Farm	Spencer	Spencer	3/13/02	5/30/02	044-0010
Old Turner Place (King’s Grant)	Henry	Bassett	9/11/02	11/21/02	044-0105
The Marshal Field and Co. Clubhouse	Fieldale	Martinsville West	3/16/05	6/1/05	044-5166
Spencer-Penn School	Spencer	Spencer	3/16/05	5/26/05	044-5167
Rock Run School	Fieldale	Martinsville West	9/14/05	11/16/05	044-5171
John D. Bassett High School	Bassett	Bassett	12/7/05	2/3/06	044-5169
R.L. Stone House	Not Available	Bassett	6/8/06	8/16/06	044-5174
Edgewood	Not Available	Martinsville West	12/6/06	3/29/07	044-5172
Fieldale Historic District	Fieldale	Martinsville West	12/5/07	2/22/08	044-5173
John Waddey Carter House	Martinsville	Martinsville East	9/20/88	11/3/88	120-0035
Little Post Office	Martinsville	Martinsville East	12/4/96	2/21/97	120-0047
Scuffle Hill	Martinsville	Martinsville East	12/4/96	2/21/97	120-0006
Martinsville Historic District	Martinsville	Martinsville East	4/22/98	10/30/98	120-5001
East Church Street – Starling Avenue Historic District	Martinsville	Martinsville East	6/8/06	9/6/06	120-5002
Fayette Street Historic District	Martinsville	Martinsville East	3/7/07	5/2/07	120-5003
Dry Bridge School	Not Available	Martinsville East	12/18/08	Pending	120-5034

Table 4.9.2 Summary of Historic Sites in Patrick County

Name of Historic Site	City/Town	Quadrangle	VLR Listing	NRHP Listing	NRHP File #
Reynolds Homestead	Critz	Patrick Springs	11/3/70	9/22/71 NHL 12/22/77	070-0005
Bob White Covered Bridge	Woolwine	Charity	4/17/73	5/22/73	070-0027
Jack's Creek Covered Bridge	Woolwine	Woolwine	4/17/73	5/22/73	070-0002
Patrick County Courthouse	Stuart	Stuart	9/17/74	12/27/74	307-0001
Aurora (Pink House)	Spencer	Spencer	8/21/90	2/4/91	070-0011
Cockram Mill	Meadows of Dan	Meadows of Dan	10/16/90	12/6/90	070-0006
J.E.B. Stuart Birthplace	Ararat	Mt. Airy N	12/3/97	9/24/98	070-0060
Stuart Uptown-Historic District	Stuart	Stuart	6/13/01	1/24/02	307-5004
Goblintown Mill	Stuart	Charity	9/8/04	11/27/04	070-5042
Fairy Stone State Park (also MPS 134-5088)	Not Available	Philpott Reservoir	6/8/06	4/10/07	070-0057
Reverend Robert Childress Rock Churches, MPD (Carroll, Floyd, Patrick Counties)	Not Available	Not Available	12/6/06	3/30/07	017-5032
Bluemont Presbyterian Church and Cemetery (also MPD 017-5032)	Fancy Gap	Laurel Fork	12/6/06	3/30/07	070-5044
Mayberry Presbyterian Church (also MPD 007-5032)	Meadows of Dan	Meadows of Dan	12/6/06	3/30/07	070-5045

Table 4.9.3 Summary of Historic Sites in Pittsylvania County

Name of Historic Site	City/Town	Quadrangle	VLR Listing	NRHP Listing	NRHP File #
Little Cherrystone (Wooding House)	Chatham	Spring Garden	9/9/69	11/12/69	071-0036
Yates Tavern (Yancy Cabin)	Gretna	Gretna	11/19/74	12/19/74	071-0060
Mountain View	Chatham	Chatham	6/19/79	9/10/79	071-0025
Berry Hill	Berry Hill	Brosville	2/15/77	5/6/80	071-0006
Windsor	Cascade	Northeast Eden	4/15/80	7/30/80	071-0035
Old Clerk's Office, Chatham	Chatham	Chatham	10/20/81	7/8/82	187-0002
Pittsylvania County Courthouse	Chatham	Chatham	6/16/81	10/29/81 NHL 05/04/87	087-0007
Leesville Dam Site	Altavista	Leesville	2/21/89	11/2/89	071-0108

Name of Historic Site	City/Town	Quadrangle	VLR Listing	NRHP Listing	NRHP File #
Bill's Diner (also MPS 151-5508)	Chatham	Chatham	6/19/96	12/16/96	187-0014
Burnett's Diner (also MPS 151-5508)	Chatham	Chatham	6/19/96	12/16/96	187-0013
Philip Craft House	Not Available	Pittsville	12/06/00	2/16/01	071-0188
Chatham Historic District	Chatham	Chatham	3/14/01	7/13/01	187-5001
Locust Hill	Hurt	Straightstone	9/11/02	11/27/02	071-5153
Hill Grove School	Hurt	Straightstone	12/3/03	2/25/04	071-5187
Woodlawn	Vernon Hill	Java	3/16/05	5/26/05	071-0037
Seven Springs Farm	Not Available	Brosville	9/18/08	Pending	071-5255
John and Nancy Yeatts House	Not Available	Pittsville	12/18/08	Pending	071-5250
Danville Public Library (Confederate Memorial, Sutherlin House)	Danville	Danville	5/13/69	11/12/69	108-0006
Danville Historic District (Millionaire's Row and Old West End HD)	Danville	Danville	11/9/72	4/11/73	108-0056
Penn-Wyatt House	Danville	Danville	10/17/78	9/7/79	108-0003
Dan's Hill	Danville	Danville	10/17/78	5/30/79	108-5066
Danville Tobacco Warehouse and Residential District	Danville	Danville	3/18/80	7/8/82	108-0058
Dan River, Inc. (Riverside Cotton Mills)	Danville	Danville	7/20/82	DOE 6/18/82	108-0013
Dan River, Inc. (Riverside Division Historic District)	Danville	Danville	3/15/00	5/11/00	
Hotel Danville	Danville	Danville	10/16/84	12/6/84	108-0027
Main Street Methodist Episcopal Church South	Danville	Danville	10/16/90	12/6/90	108-0063
Downtown Danville Historic District	Danville	Danville	6/16/93	8/12/93	108-0111
Danville National Cemetery	Danville	Danville	1/15/95	4/7/95	108-0057
Danville Municipal Building	Danville	Danville	4/28/95	7/21/95	108-0111-0071
Danville Southern Railway Passenger Depot	Danville	Danville	4/28/95	7/21/95	108-0058-0012
Holbrook-Ross	Danville	Danville	7/2/97	11/18/97	108-0180

Name of Historic Site	City/Town	Quadrangle	VLR Listing	NRHP Listing	NRHP File #
Streets Historic District					
North Danville Historic District	Danville	Danville	9/10/03	1/15/04	108-0113
Langhorne House	Danville	Danville	12/7/05	2/1/06	108-0064

Source 1: *Virginia Landmarks Register, National Register of Historic Places*, Updated through DCR December 18, 2008 and NPS December 5, 2008 Announcements, <http://www.dhr.virginia.gov/registers/RegisterMasterList.pdf> March 16, 2009.

Source 2: National Register Information System, <http://www.nr.nps.gov/> March 18, 2009.

4.10 Virginia’s Indian Tribes

The Virginia Council on Indians (VCI) is a subcommittee of the National Association of Tribal Historic Preservation Officers created by the General Assembly to gain knowledge of the historic dealings and relationships between the Commonwealth of Virginia and the Virginia Indian Tribes. The Council’s duties include studies and research regarding the Indian Tribes in Virginia and making recommendations to the Commonwealth on issues regarding Virginia Indians. The list of the Indian Tribes available through VCI was reviewed on March 18, 2009. No Indian tribes are located within the region.

4.11 Unusual Geologic Formations, Natural Heritage Resources, and Special Soil Types

DCR-NHP tracks natural heritage resources by County. The natural heritage resources include rare plant and animal species, rare and exemplary natural communities, and significant geologic features, primarily cave and karst resources. The geology of the region is not conducive to karst environments and none of the counties were identified by DCR as having karst topography. Natural heritage resources identified in Henry County, Patrick County, and Pittsylvania County are presented in Tables 4.11.1, 4.11.2, and 4.11.3, respectively.

Table 4.11.1 Natural Heritage Resources in Henry County

Category	Common Name	Scientific Name	Status
Natural Community	Basic Mesic Forest	n/a	
Ephemeroptera (Mayflies)	Berner’s Ephemerella Mayfly	<i>Ephemerella berneri</i>	
Fish	Roanoke Logperch	<i>Percina rex</i>	FE/SE
Vascular Plants	Carolina Alum-root	<i>Heuchera caroliniana</i>	
	Little-leaf Sensitive-briars	<i>Mimosa quadrivalvis var.</i>	

Category	Common Name	Scientific Name	Status
		<i>angustata</i>	
	Dawny Phlox	<i>Phlox pilosa ssp. pilosa</i>	
	Smooth Azalea	<i>Rhododendron arborescens</i>	
	Mountain Camellia	<i>Stewartia ovate</i>	

Table 4.11.2 Natural Heritage Resources in Patrick County

Category	Common Name	Scientific Name	Status
Amphibians	Shovel-nosed Salamander	<i>Desmognathus marmoratus</i>	
Natural Community	Low-Elevation Basic Outcrop Barren	n/a	
Fish	Highback Chub	<i>Hybopsis hypsinotus</i>	
	Orangefin Madtom	<i>Noturus gilberti</i>	ST
	Piedmont Darter	<i>Percina crassa</i>	
	Roanoke Logperch	<i>Percina rex</i>	FE/SE
	Rustyside Sucker	<i>Thoburnia hamiltoni</i>	
Non-vascular Plants	Five-rowed Peatmoss	<i>Sphagnum quinquefarium</i>	
Plecoptera (Stoneflies)	Virginia Sallfly	<i>Sweltsa voshelli</i>	
Reptiles	Coal Skink	<i>Eumeces anthracinus</i>	
	Bog Turtle	<i>Glyptemys muhlenbergii</i>	FT/SE
Vascular Plants	Sweet-shrub	<i>Calycanthus floridus var. floridus</i>	
	Smooth Sweet-shrub	<i>Calycanthus floridus var. glaucus</i>	
	Small-anthered Bittercress	<i>Cardamine micranthera</i>	FE/SE
	White-leaved Leatherflower	<i>Clematis glaucophylla</i>	
	Spiral Pondweed	<i>Potamogeton spirillus</i>	
	Mountain Camellia	<i>Stewartia ovate</i>	

Table 4.11.3 Natural Heritage Resources in Patrick County

Category	Common Name	Scientific Name	Status
Natural Community	Eastern Hemlock-Hardwood Forest	n/a	
	Low-Elevation Basic Outcrop Barren		
	Mountain/Piedmont Basic Woodland		
	Piedmont/Mountain Floodplain Forest		
	Upland Depression Swamp		
Crustacea (Amphipods, Isopods, & Decapods)	Pittsylvania Well Amphipod	<i>Stygobromus obrutus</i>	
Fish	Snail Bullhead	<i>Ameiurus brunneus</i>	
	Orangefin Madtom	<i>Noturus gilberti</i>	ST
	Roanoke Logperch	<i>Percina rex</i>	FE/SE
(Danville)	Speckled Killifish	<i>Fundulus rathbuni</i>	
Gastropoda (Snails)	Spirit Supercoil	<i>Paravitrea hera</i>	FE
Reptiles	Southeastern Crowned Snake	<i>Tantilla coronate</i>	

Category	Common Name	Scientific Name	Status
Vascular Plants	Southern Thimble-weed	<i>Anemone berlandieri</i>	
	Blue-hearts	<i>Buchnera americana</i>	
	Smooth Sweet-shrub	<i>Calycanthus floridus</i> var. <i>glaucus</i>	
	Divided Toothwort	<i>Cardamine dissecta</i>	
	Chestnut Lipfern	<i>Cheilanthes eatonii</i>	
	Flat-stemmed Spike-rush	<i>Eleocharis compressa</i>	
	Blackfoot Quillwort	<i>Isoetes melanopoda</i>	
	Small Whorled Pogonia	<i>Isotria medeoloides</i>	FT/SE
	Carolina Prairie-trefoil	<i>Lotus helleri</i>	
	Obovate Marshallia	<i>Marshallia obovata</i> var. <i>obovata</i>	
	Little-leaf Sensitive-briars	<i>Mimosa quadrivalvis</i> var. <i>angustata</i>	
	Nestronia	<i>Nestronia umbellula</i>	SE
	Stiff Goldenrod	<i>Oligoneuron rigidum</i> var. <i>glabratum</i>	
	Downy Phlox	<i>Phlox pilosa</i> ssp. <i>pilosa</i>	
	Smooth Azalea	<i>Rhododendron</i> <i>arborescens</i>	
Mountain Camellia	<i>Stewartia ovate</i>		
Pineland Squarehead	<i>Tetragonotheca</i> <i>helianthoides</i>		
Buffalo Clover	<i>Trifolium reflexum</i>		

Source: http://www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml March 16, 2009.

Active and Inactive Mine Sites

Because of their potential impact to natural resources by stream sedimentation from unvegetated soils, acid drainage from tailings and waste piles, groundwater degradation, active and inactive mines were reviewed and mapped. Information on Virginia's economic geology (mineral resources) was provided by the Department of Mines, Minerals and Energy (DMME) – Division of Geology and Mineral Resources. Primary mineral resources in the Blue Ridge Physiographic Province include industrial minerals such as feldspar, phosphate, and kaolin; metals including iron, manganese, copper, and titanium; building stone including soapstone; and aggregate. Primary mineral resources in the Piedmont Physiographic Province include industrial minerals such as feldspar, mica, kyanite, vermiculite, and barite; metals including iron, manganese, copper, gold, pyrite, and tungsten; building stone including granite, slate, and marble; and aggregate.

Active mines within the region include open pit, drag line, quarry, dredge, and exploration. There are four active mines in Henry County (sand, diorite, and granite), one in Patrick County

(granite), and nine in Pittsylvania County (granite, sand, and slate). Two additional mines are located in Danville (sand).

Inactive mines include adit, pit, quarry, shaft, and prospect mines. Some adits and shafts have collapsed and are under review by DMME. Primary commodities of inactive mines include the following:

- Henry County – mica, biotite gneiss, fill, kaolin, crushed stone, iron (magnetite), granite, feldspar, sand, emery, and gold.
- Patrick County – iron, greenstone, and fill.
- Pittsylvania County – sand, sandstone, granite, manganese, barite, schist, shale, iron, vein quartz, gneiss saprolite, mica, emery, gravel, gold, feldspar, and talc.
- Danville – sand and gravel.

In 1996, the General Assembly of Virginia amended state statutes governing localities' comprehensive planning to include mineral resources among the key considerations in planning for future growth. To aid in this process, DMME initiated a program to deliver geologic and mineral resource information to the counties, municipalities, and regional planning authorities. This information is not yet available and is not included in this water supply plan.

In addition, it is important to note the Cole Hill Uranium deposit located approximately six miles northeast of the Town of Chatham in Pittsylvania County. The Cole Hill Uranium deposit is currently being investigated as a future uranium mining site. However, in order to become an active mine, the Commonwealth of Virginia would have to lift its 27-year-old moratorium on uranium mining.

Urban Soils

Urban soils are found in watersheds that provide drinking water, food, and natural resources to communities according to USDA NRCS. Urban soils can also be located in city park areas, recreational areas, community gardens, green belts, lawns, septic absorption fields, sediment basins, and other uses. Urban lands are altered, reworked, or removed soil material. Commercial, industrial, and residential developments cover much of the surface of soils defined as Urban. Also, soils may be classified as Udorthents. These are categorized as excavations or

fill material. The USDA NRCS web soil survey identifies the acreage of urban soils for each county and city as presented in Table 4.11.4.

Table 4.11.4 Urban Soils Identified in Region.

Survey Area	Unit Name	Acreage in Survey Area	Percent of Survey Area
Henry County	Minnieville-Urban land complex 7-15% slopes	879	0.3
	Udorthents-Urban land complex 2-15% slopes	3,217	1.3
	Udorthents, loamy	832	0.3
	Woolwine-Urban land complex 7-15% slopes	1,338	0.5
Martinsville	Minnieville-Urban land complex 7-15% slopes	505	0.2
	Udorthents-Urban land complex 2-15% slopes	1,038	0.4
	Woolwine-Urban land complex 7-15% slopes	657	0.3
Patrick County	Udorthents, loamy	153	<0.1
Pittsylvania County	Udorthents, loamy	2,115	0.3
	Urban land	1,847	0.3
Danville	Udorthents, loamy	925	0.1
	Urban land	944	0.1

Source: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm> March 19, 2009.

- Henry County Soil Map v2 November 5, 2007, Soil Data v7 January 21, 2009.
- Patrick County Soil Map v2 August 12, 2008, Soil Data v2 January 21, 2009.
- Pittsylvania County Soil Map v1 October 8, 2004, Soil Data v7 December 23, 3008.

4.12 Wetlands

The National Wetlands Inventory (NWI) is a department under the U.S. Fish and Wildlife Service (FWS), a bureau of the U.S. Department of Interior. NWI produces and provides information on the characteristics, extent, and status of the Nation’s wetlands and deepwater habitats and other wildlife habitats.

The following definition is used by the FWS for conducting the NWI: “Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.” Hydrophytes are plants capable of growing in water or

waterlogged soils/substrates; hydric soils are waterlogged soils that support plant growth; and nonsoil is a nonvegetated substrate like a mudflat or rock outcrop. This is different than the federal regulatory definition of a wetland, which is used to identify wetlands subject to federal regulations under the Clean Water Act. The federal regulatory definition includes only vegetated wetlands.

To categorize wetland plants, the federal government has compiled a list with plants identified based on four different classifications based on expected frequency to occur in wetlands (obligate, facultative wetlands species, facultative species, and facultative upland species). This list contains approximately 7,000 plant species. The NWI is also compiling a plant database based on technical literature that contains habitat information on approximately 5,200 plant species that have the potential to occur in wetlands. When completed, this computerized database will be available to all governmental agencies; however, this database is not currently active. Due to the vast nature of the plant databases, identification of specific local and regional wetlands plants is not included in this report.

Hydric soils form under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils are important in land-use planning, conservation planning, and assessment of potential wildlife habitat. A combination of hydric soil, hydrophytic vegetation, and hydrologic properties define wetlands. Therefore, hydric soils may be an indicator of potential wetlands. Hydric soils are identified in all counties within the region.

Table 4.12.1 Hydric Soils in Henry County

Unit Name	Component Name	Map Unit	Percent of Map Unit	Landforms	Hydric Criteria¹
Ayersville gravelly loam (2-7% slopes)	Leaksville	1B	3	Drainageways	2B3
Ayersville gravelly loam (7-15% slopes)	Leaksville	1C	3	Drainageways	2B3
Codorus loam (0-2% slopes)	Hatboro	5A	2	Flood plains	2B3
Colvard fine sandy loam (0-2% slopes)	Hatboro	6A	2	Flood plains	2B3
Creedmoor fine sandy loam (1-	Leaksville	7B	3	Drainageways	2B3

Table 4.12.1 Hydric Soils in Henry County

Unit Name	Component Name	Map Unit	Percent of Map Unit	Landforms	Hydric Criteria¹
4% slopes)					
Delanco loam (0-4% slopes)	Kinkora	8A	2	Depressions, Stream Terraces	2B3
Elsinboro fine sandy loam (0-4% slopes)	Kinkora	10A	2	Depressions, Stream Terraces	2B3
Leaksville silt loam (0-4% slopes)	Leaksville	11A	85	Drainageways	2B3
Mayodan fine sandy loam (2-7% slopes)	Leaksville	13B	4	Drainageways	2B3
Mayodan fine sandy loam (7-15% slopes)	Leaksville	13C	4	Drainageways	2B3
Stoneville loam (2-7% slopes)	Leaksville	18B	4	Drainageways	2B3

Table 4.12.2 Hydric Soils in Patrick County

Unit Name	Component Name	Map Unit	Percent of Map Unit	Landforms	Hydric Criteria¹
Colvard and Suches soils (0-3% slopes)	Hatboro	9A	5	Flood plains	2B3
Dillard fine sandy loam (2-8% slopes)	Hatboro	11B	3	Flood plains	2B3
Dillard fine sandy loam (8-15% slopes)	Hatboro	12C	2	Flood plains	2B3
Dillard-Tugglesgap complex (2-8% slopes)	Nikwasi	13B	3	Flood plains	2B3
Dillard-Tugglesgap complex (8-15% slopes)	Nikwasi	14C	3	Flood plains	2B3
French loam (0-3% slopes)	Nikwasi	26A	5	Flood plains	2B3
French-Dellwood complex (0-4% slopes)	Nikwasi	27A	5	Flood plains	2B3
Hatboro loam (0-2% slopes)	Hatboro	29A	85	Flood plains	2B3

Unit Name	Component Name	Map Unit	Percent of Map Unit	Landforms	Hydric Criteria ¹
Nikwasi-Dellwood complex (0-4% slopes)	Nikwasi	35A	55	Flood plains	2B3

Table 4.12.3 Hydric Soils in Pittsylvania County

Unit Name	Component Name	Map Unit	Percent of Map Unit	Landforms	Hydric Criteria ¹
Leaksville silt loam (0-4% slopes)	Leaksville	20B	85	Depressions	2B3
Wehadkee silt loam (0-2% slopes)	Wehadkee	41A	85	Flood plains	2B3, 4

1. 2B3 – Soils in Aquic suborders, great grounds, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
- 4 – Soils that are frequently flooded for long or very long duration during the growing season.

Soil maps can be reviewed on-line through the USDA NRCS Web Soil Survey to help identify site specific soils.

NWI maps are compiled through photointerpretation techniques with limited field confirmation. Soil survey reports provide information on soil types and location specific to a region based on more extensive field investigation (i.e. hydric soils discussed previously). The combination of NWI maps and soil survey data present valuable information relative to wetlands. Current NWI mapping (Figure 4.12.1A, Figure 4.12.2A, and Figure 4.12.3A) indicates wetlands in the counties of Henry, Patrick, and Pittsylvania. Hydric soils, as discussed above, are mapped on Figures 4.12.1B, 4.12.2B, and 4.12.3B by county.

Figure 4.2.12.1A: Henry County Wetland Map

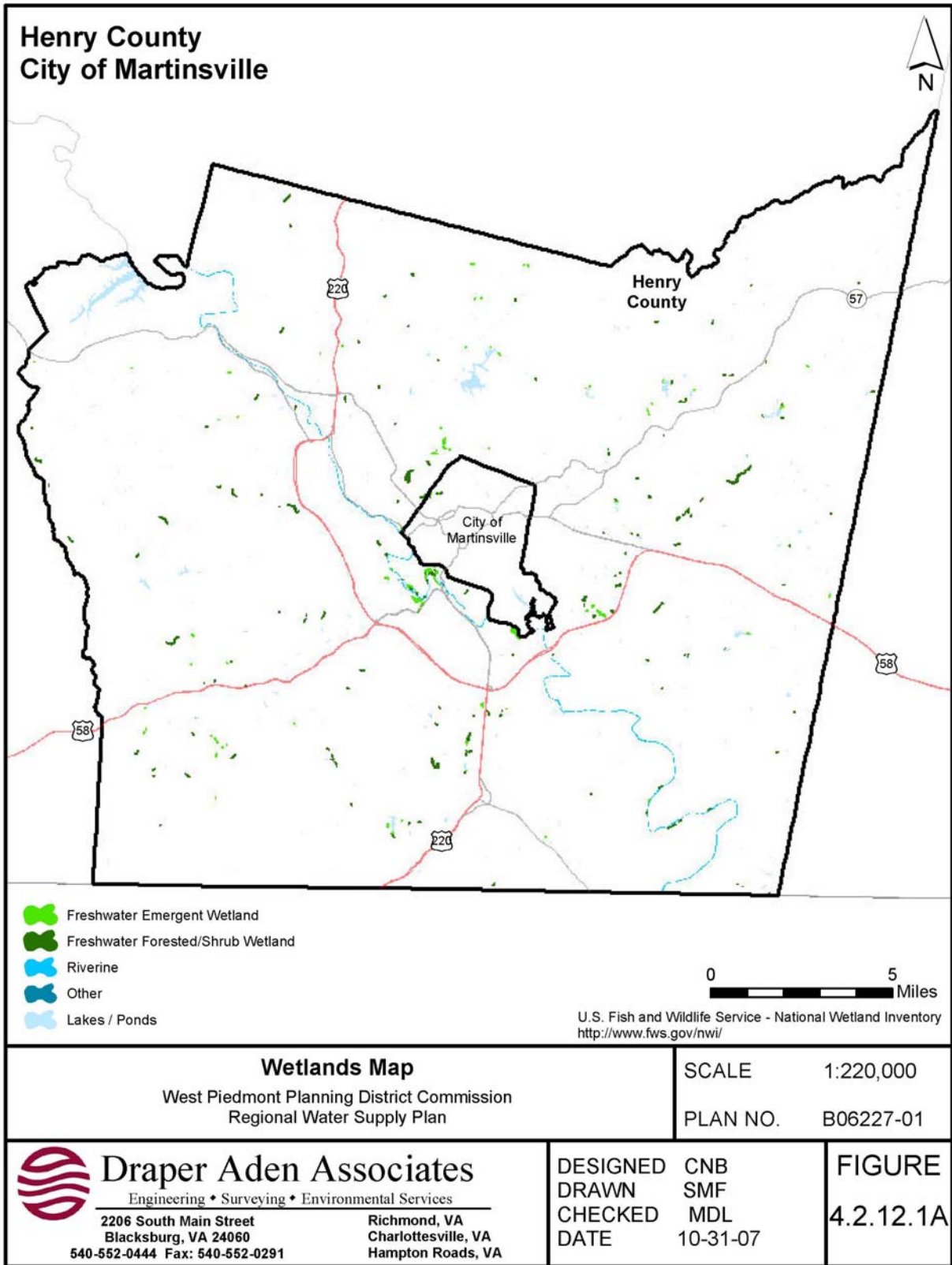
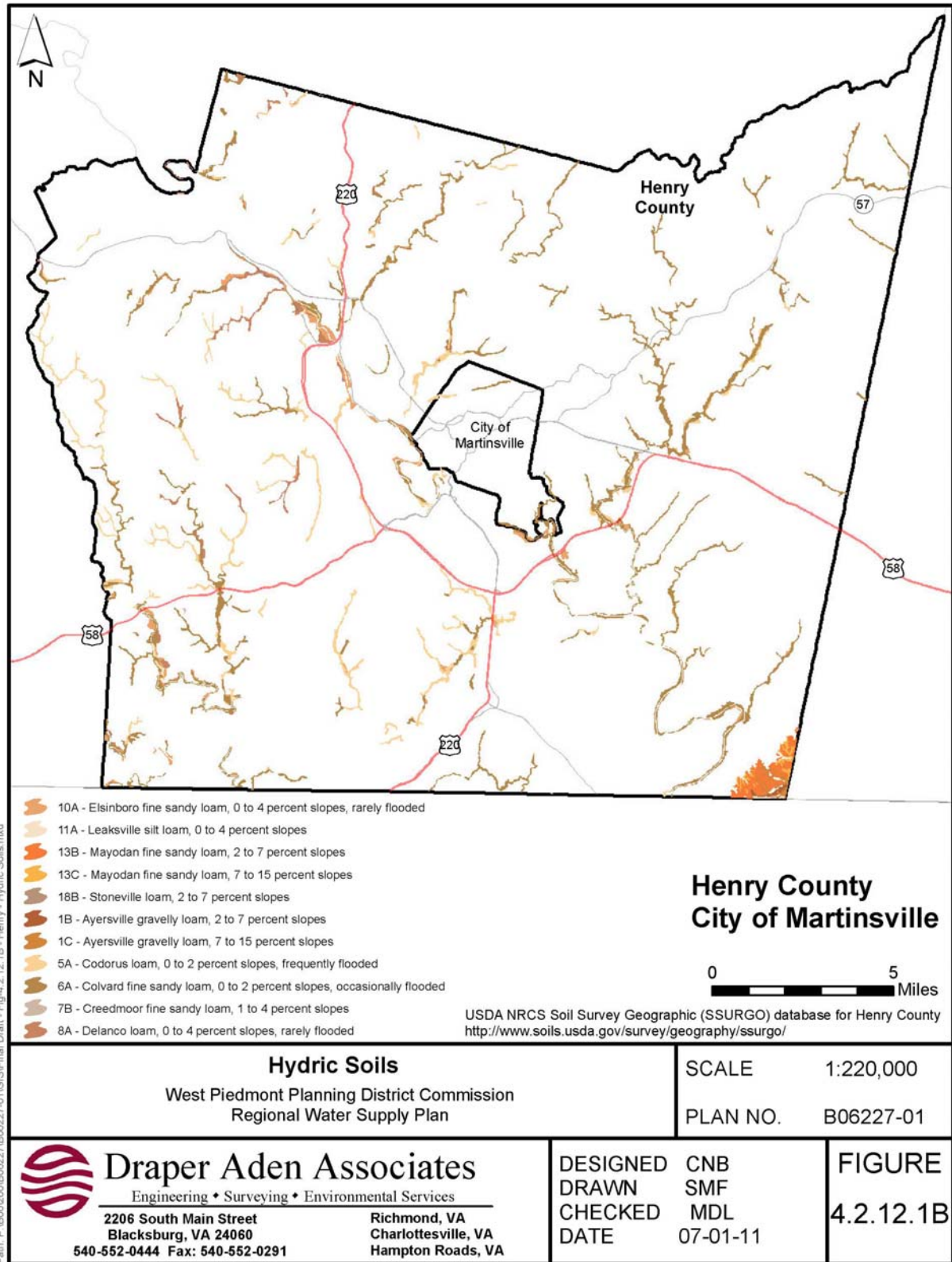


Figure 4.2.12.1B: Henry County Hydric Soil Sample



Path: P:\B06227\B06227-01\GIS\Final Draft - Fig. 4.2.12.1B - Henry - Hydric Soils.mxd

Figure 4.2.12.2A: Patrick County Wetland Map

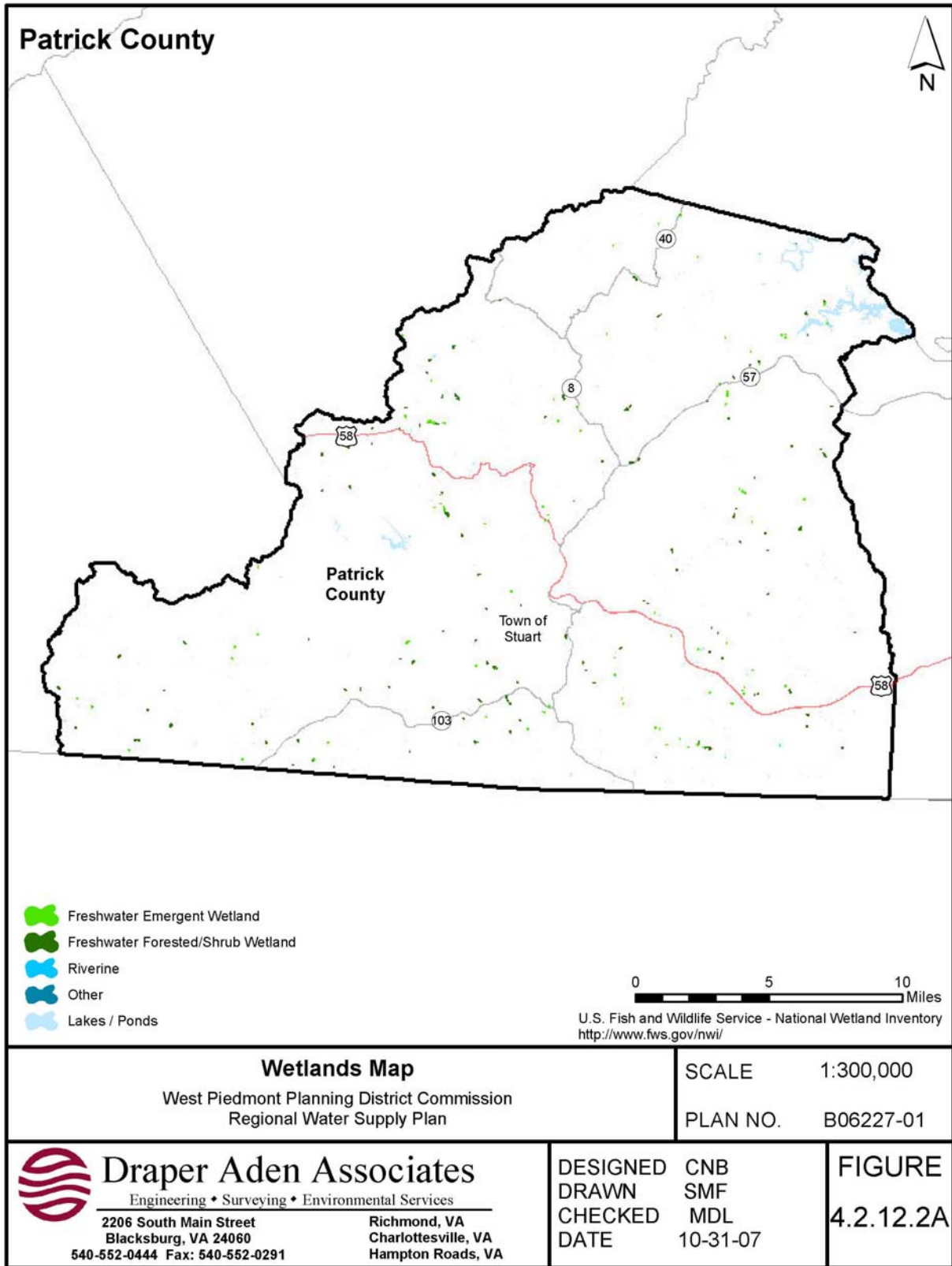


Figure 4.2.12.2B: Patrick County Hydric Soil Map

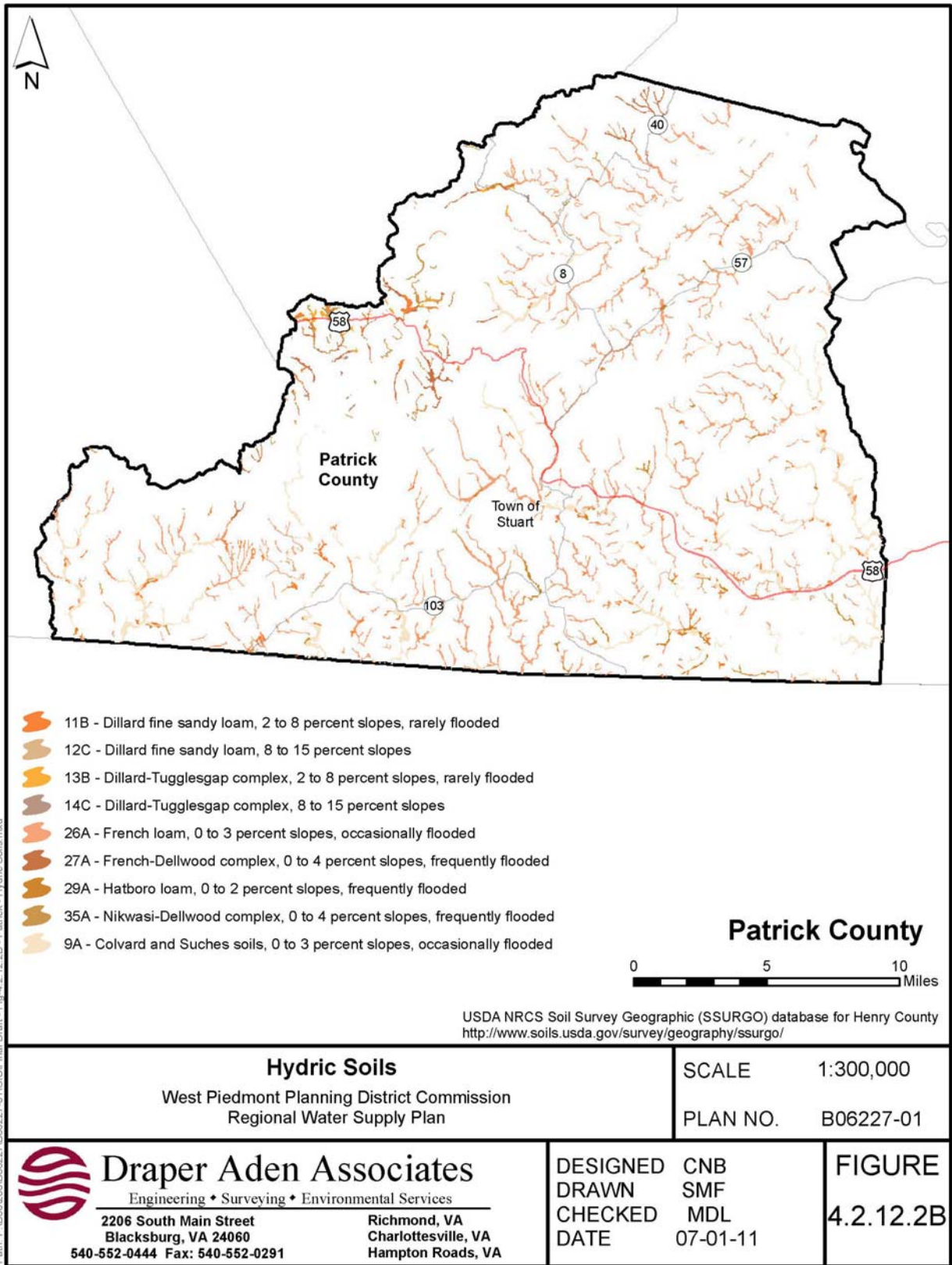


Figure 4.2.12.3A: Pittsylvania County Wetland Map

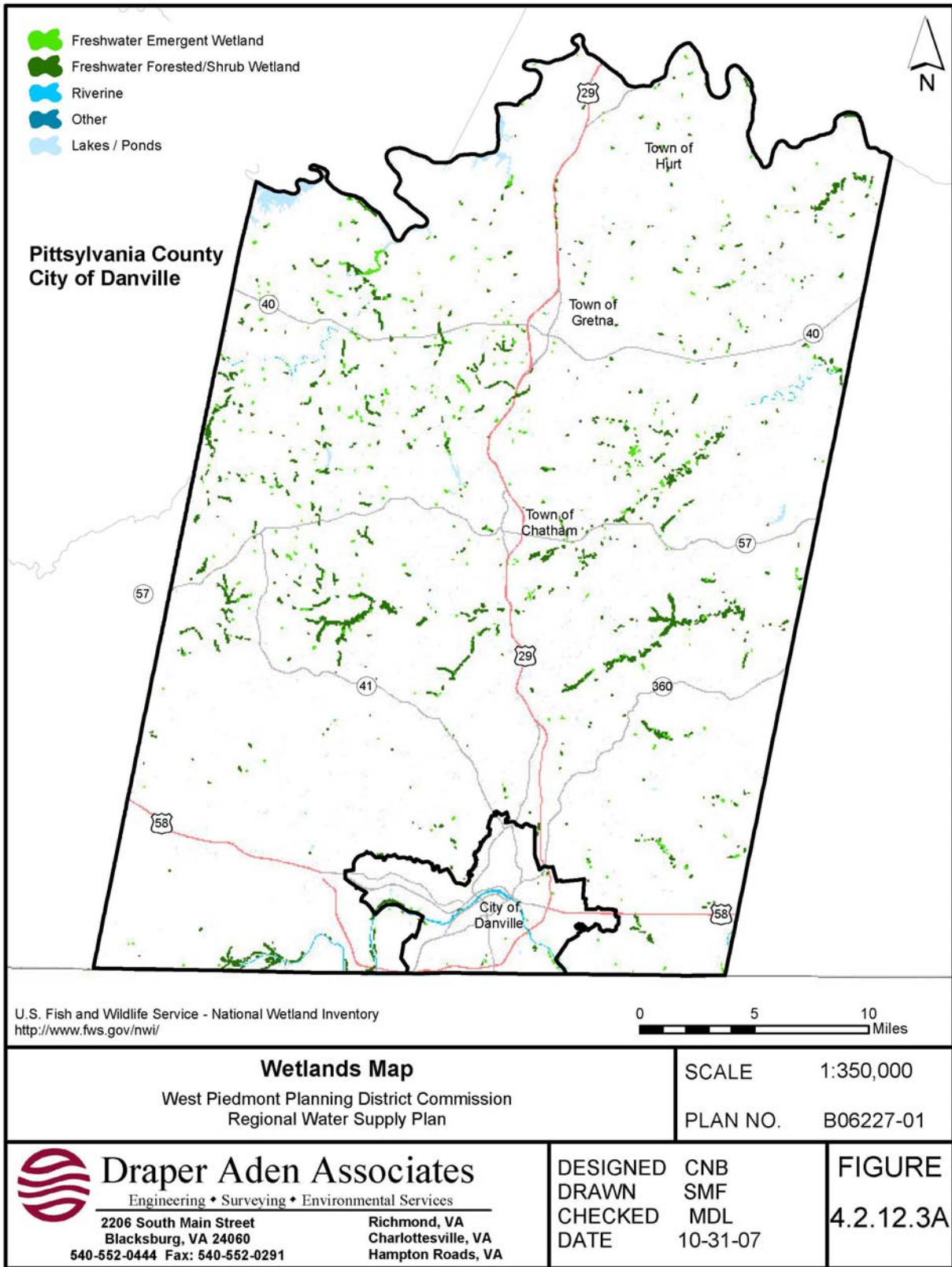
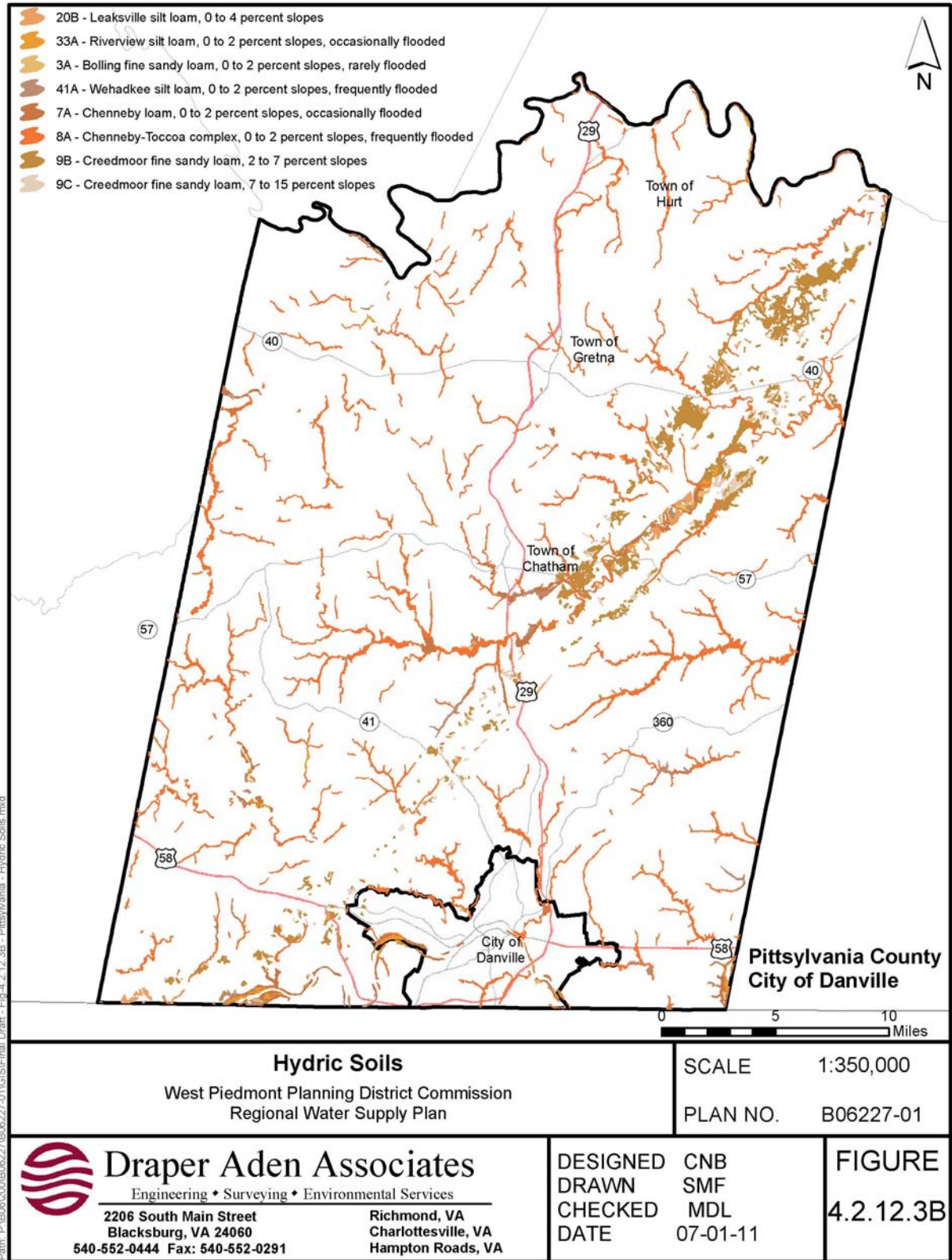


Figure 4.2.12.3B: Pittsylvania County Hydric Soil Map



4.13 Riparian Buffers or Conservation Easements

Riparian Forest Buffers

The Virginia Department of Forestry (DOF) provides information regarding the State's forest cover as environmental and economic benefits, which include economic income and employment, water quality protection, habitat protection, and recreational opportunities. Conservation of Virginia's forestland is a primary goal of the DOF. Current forested areas in Henry County, Patrick County, and Pittsylvania County are presented on the land use maps as Figures 4.13.1, 4.13.2, and 4.13.3, respectively. Riparian buffers are forested areas along stream banks. These buffers filter nutrients, sediments, and other pollutants before they can enter a waterway while also acting as habitats for plants and animals.

Conservation Easements

DCR-NHP represents a comprehensive effort to save Virginia's native plant and animal life and the ecosystems upon which they depend through inventory, conservation information provision, protection, and stewardship. The NHP established the Virginia Conservation Lands Database, which is the Commonwealth's first comprehensive, continually maintained GIS data layer for Virginia's protected conservation lands. The database includes mapped boundaries and attributes for public and certain private lands having various conservation, recreation, and open space roles. Most federal, state, regional, and interstate lands are included, such as water and park authorities, parks and undeveloped or partially-developed lands owned by localities, lands owned as preserves by nonprofit conservation organizations, conservation easements held by the Virginia Outdoors Foundation (VOF), and land trusts. A map showing the major conservation lands for the region is presented as Figure 4.13.4.

Figure 4.13.1: Henry County Land Use/Land Cover Map

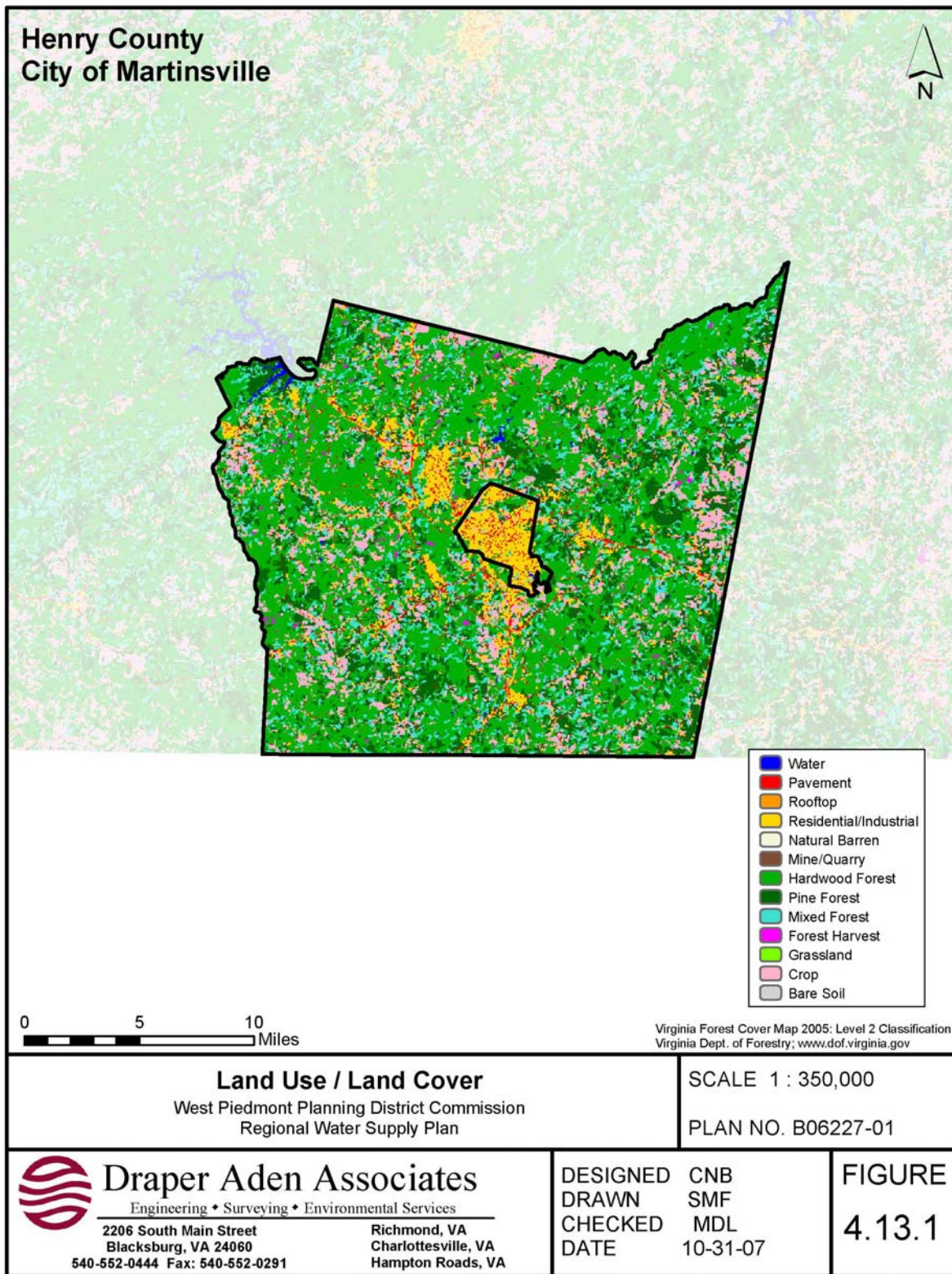


Figure 4.13.2: Patrick County Land Use/Land Cover Map

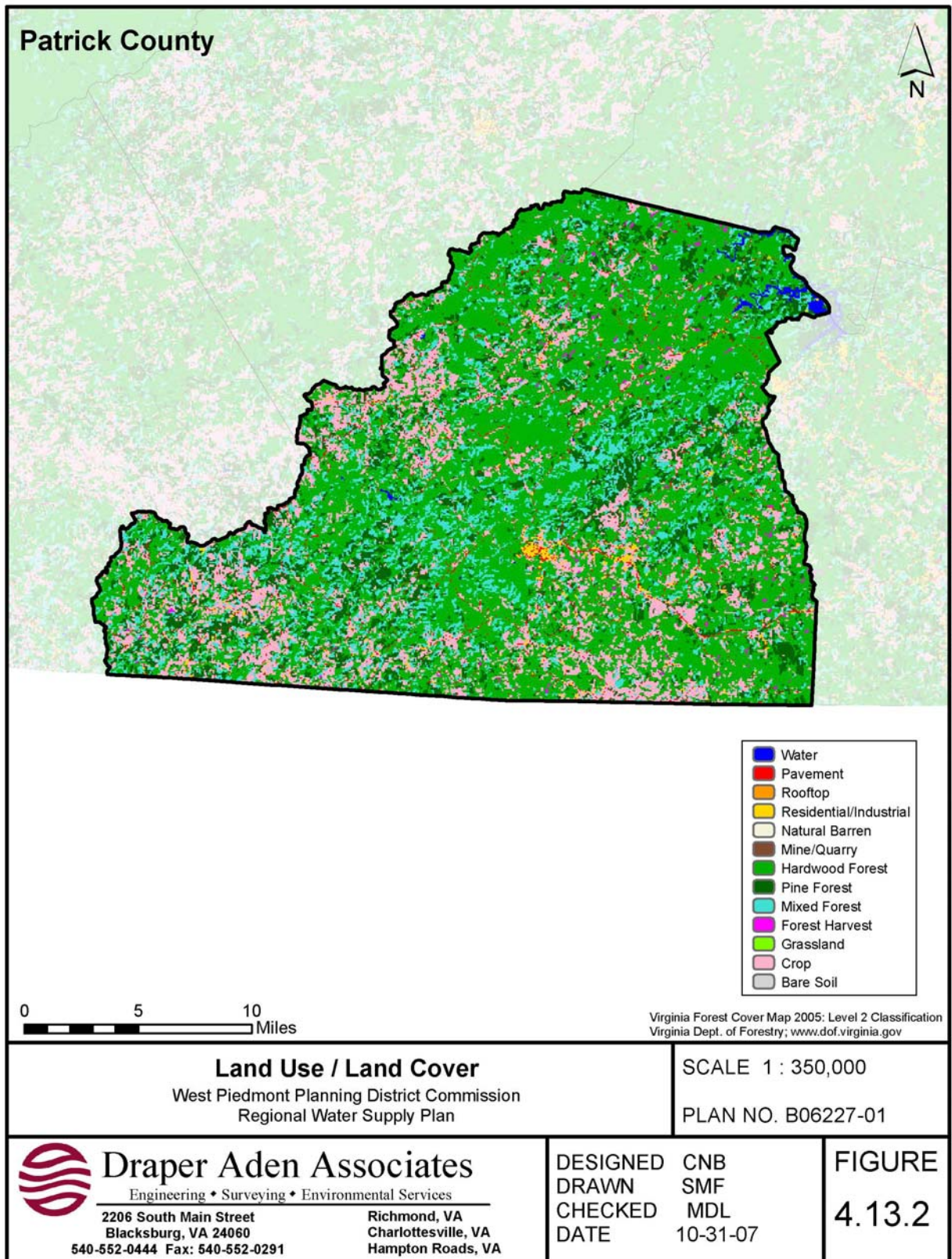


Figure 4.13.3: Pittsylvania County Land Use/Land Cover Map

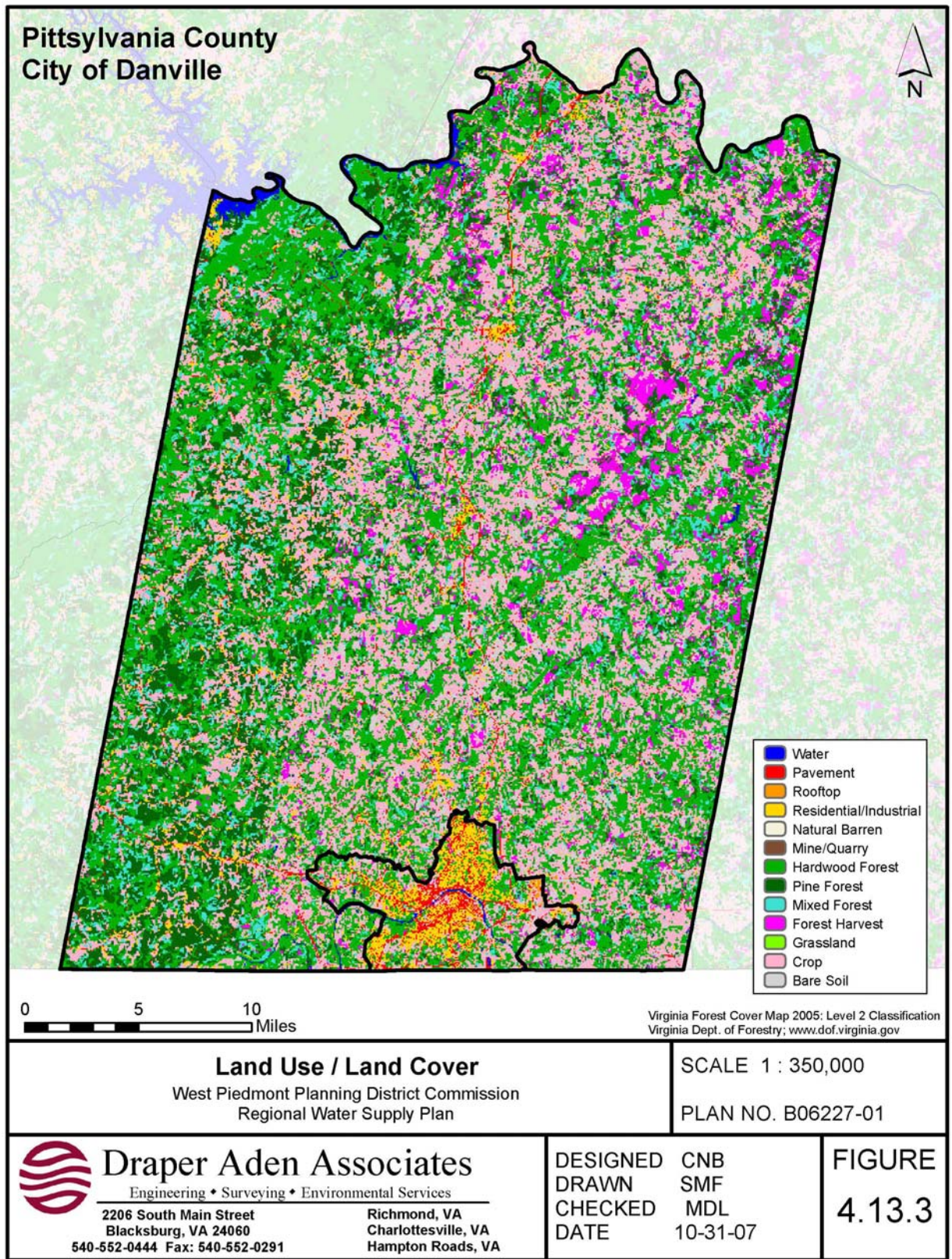
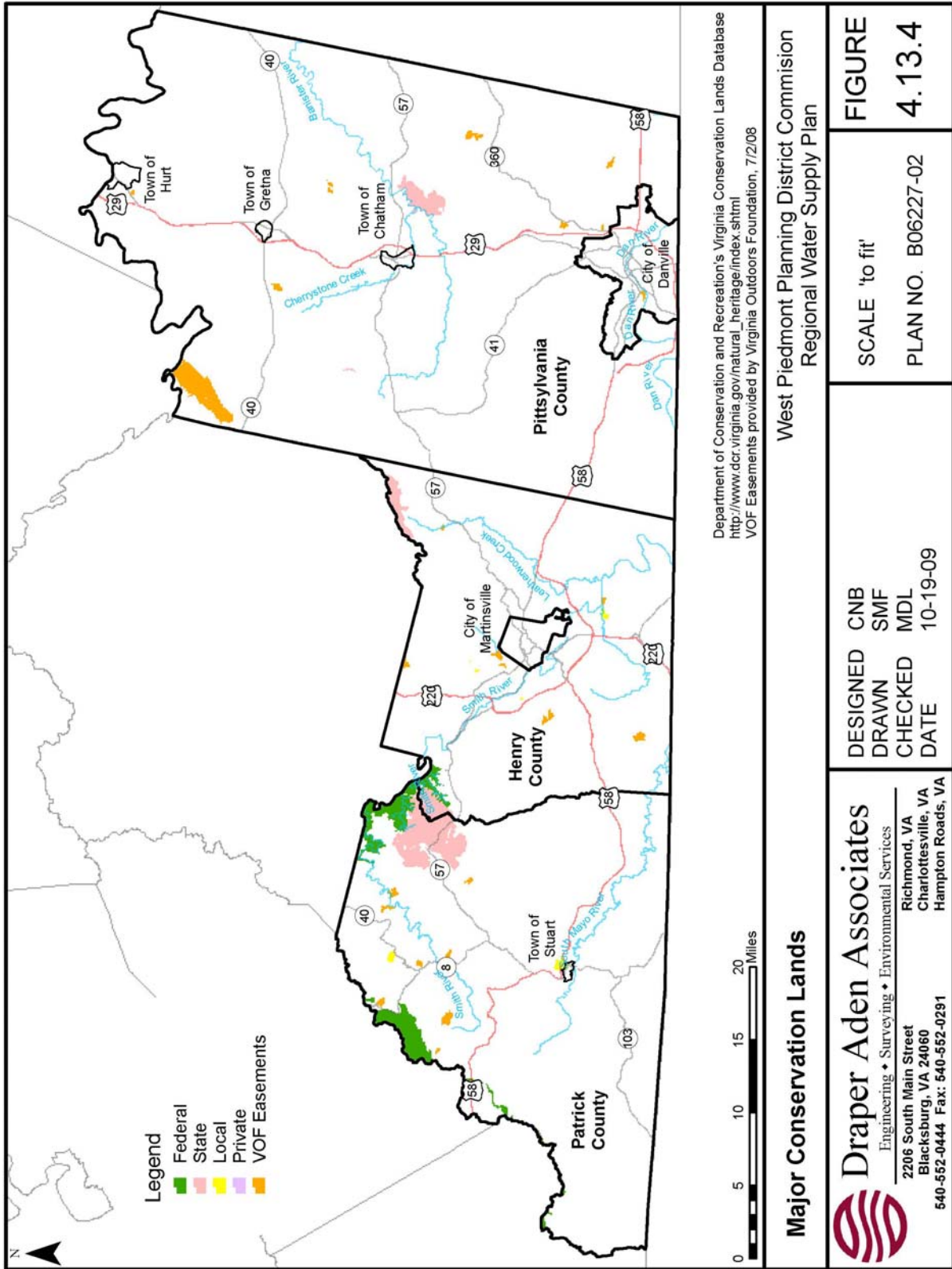


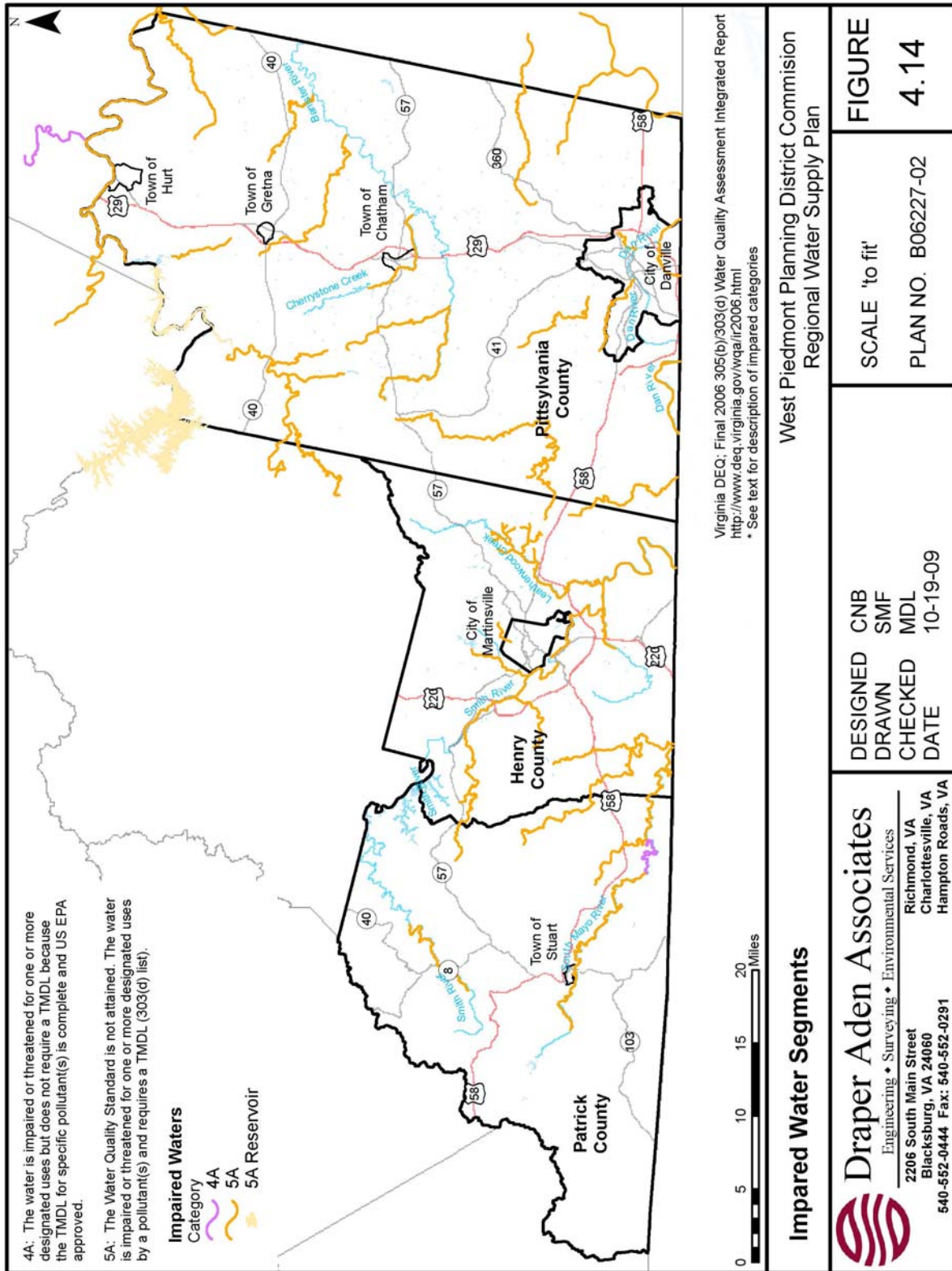
Figure 4.13.4: Major Conservation Lands Map



4.14 Presence of Impaired Streams and Type of Impairment

Information on impaired streams within the region was collected from the 2006 Water Quality Assessment 305(b)/303(d) Report. This report covers the period from January 1, 2000 through December 31, 2004. The report assesses the overall water quality for Virginia based on whether the condition of the water body being assessed permits citizens to safely enjoy the designated uses of water as described in the Virginia Water Quality Standards. The report provides an assessment by river basin. Henry County (including the Town of Ridgeway), Patrick County (including the Town of Stuart), Pittsylvania County (including the towns of Chatham, Gretna, and Hurt), City of Danville, and City of Martinsville are located within the Roanoke River Basin. An assessment of the Roanoke River Basin is provided in this report and includes the following tables: Basin Individual Use Support Summary Table (e.g., fishing, swimming, wildlife) and waters not meeting designated use by various cause category. The report also includes an integrated list of impaired waters by river basin. A map showing impaired streams in the region by category is included as Figure 4.14.

Figure 4.14: Map Showing Impaired Stream Segments in the Region



4.15 Location of Point Source Discharges

Information on point source discharges in the region was collected from the USEPA Envirofacts Data Warehouse (EDW) and DEQ databases. A National Pollutant Discharge Elimination System (NPDES) permit is required for all facilities which discharge pollutants from any point source into waters of the United States. For Virginia, this includes storm water discharges from industrial facilities. Exclusions include vessels, runoff from fields and orchards, return flows from irrigation, land disposal of pollutants permitted by other Virginia programs, and discharges into otherwise permitted treatment systems. The Virginia Pollutant Discharge Elimination System (VPDES) Permit Program is regulated under 9 VAC 25-31 and is monitored and maintained by DEQ. VPDES permits are the state equivalent of the NPDES permit and permit identification is the same.

The EDW contains data of USEPA-regulated facilities with permitted discharges to water. The database compiles information from the Permit Compliance System (PCS), the Safe Drinking Water Information System (SDWIS), and the National Contaminant Occurrence Database (NCOD). Specifically, the PCS allows a review of information relative to permit issuance and expiration, and discharge and monitoring data. Information pertaining to permitted discharges to water from the PCS database and DEQ database files is presented in the tables below.

Table 4.15.1 Active NPDES/VPDES Permits (Point Source Discharges) in Henry County

Permit #	Facility Name	Town/City	Type
VAG840057	Boxley Material Company – Fieldale Plant	Martinsville	Non-metallic Mineral Mining
VAG840056	Boxley Material Company – Horsepasture Plant	Martinsville	Non-metallic Mineral Mining
VAR051728	Adams Construction Co - Horsepasture Drum Plant	Martinsville	Industrial Storm Water
VAR050165	American Furniture Company Inc - Redd Level	Martinsville	Industrial Storm Water
VAR050128	Bassett Chair Company	Bassett	Industrial Storm Water
VAR050129	Bassett Fiberboard Plant	Bassett	Industrial Storm Water
VAR051623	Bassett Mirror Company Inc - Philpott Plant	Bassett	Industrial Storm Water
VAR050136	Bassett Superior Lines	Bassett	Industrial Storm Water
VAR050137	BFI Bassett	Bassett	Industrial Storm Water
VAR050195	Blue Ridge Airport	Spencer	Industrial Storm Water
VAR051260	Blue Ridge Solvents and Coatings Incorporated	Henry	Industrial Storm Water
VAR051640	Chesapeake Custom Chemical	Ridgeway	Industrial Storm Water

Permit #	Facility Name	Town/City	Type
VAR050001	CPFilms Inc	Axton	Industrial Storm Water
VAR051576	Cycle Systems Inc - Martinsville	Martinsville	Industrial Storm Water
VAR050445	Georgia Pacific Corrugated I LLC	Ridgeway	Industrial Storm Water
VAR050501	Gravely Auto Sales & Recycling	Axton	Industrial Storm Water
VAR050197	Henry County Plywood Corporation	Ridgeway	Industrial Storm Water
VAR051400	Henry County PSA - Lower Smith River STP	Collinsville	Industrial Storm Water
VAR050199	Hooker Furniture Corporation - Panel Plant	Martinsville	Industrial Storm Water
VAR050446	Ideal Fuels Inc	Martinsville	Industrial Storm Water
VAR051604	MasterBrand Cabinets Incorporated	Martinsville	Industrial Storm Water
VAR051279	Nelson Auto Salvage	Collinsville	Industrial Storm Water
VAR050248	Pine Products Incorporated	Martinsville	Industrial Storm Water
VAR050721	Quikrete - Martinsville	Martinsville	Industrial Storm Water
VAR050455	Ridgeway Furniture	Ridgeway	Industrial Storm Water
VAR051473	Smart Machine Technologies Inc	Ridgeway	Industrial Storm Water
VAR050249	Smurfit Stone - Martinsville	Martinsville	Industrial Storm Water
VAR050163	Speedweigh Recycling Incorporated	Martinsville	Industrial Storm Water
VAR050164	Stanley Furniture Co Inc - Martinsville	Martinsville	Industrial Storm Water
VAR050532	Stanley Furniture Co Inc - Stanleytown	Stanleytown	Industrial Storm Water
VAR051747	Swing Transport Incorporated	Ridgeway	Industrial Storm Water
VAR051716	Tri State Foam Products	Ridgeway	Industrial Storm Water
VAR051003	W Henry Hardy Inc - Martinsville	Martinsville	Industrial Storm Water
VAR050758	W L Construction and Paving Inc - Fieldale	Fieldale	Industrial Storm Water
VAG110016	Martinsville Ready Mix	Martinsville	Car Wash
VAG402115	Ashworth Residence – Kristopher and Renee	Henry	Domestic Sewage
VAG402049	Scott Newcomb Chrysler Jeep	Bassett	Domestic Sewage
VAG402105	US Post Office - Henry	Henry	Domestic Sewage
VAG750037	Alan Mullins Chrysler-Jeep Car Wash	Bassett	Concrete
VAU000028	Auto Salvage Company	Bassett	Used Motor Vehicle Parts
VA0086665	Bassett Mirror Co. Inc.	Bassett	Metal Household Furniture
VA0029858	Carver Estates Sewage Treatment	Martinsville	Sewerage Systems
VAG112014	Chandler Concrete Co. Inc.	Martinsville	Concrete Products
VA0072354	CP Films Inc. – Plant 1	Fieldale	Coated and Laminated Paper
VA0090280	Henry County PSA – Green	Martinsville	Sewerage Systems
VA0060445	Henry County PSA – Piedmont	Axton	Sewerage Systems
VA0025305	Martinsville STP	Ridgeway	Sewerage Systems
VA0023558	Patrick Henry Correctional Unit 28	Ridgeway	Sewerage Systems
VA0090310	Philpott Dam Hydroelectric Plant	Bassett	Electric Services
VA0058441	River Water Filtration Plant	Bassett	Water Supply
VAP061654	Upper Smith River WWTP	Fieldale	-
VA0021989	Virginia Glass Products Co.	Ridgeway	Glass Products
VAU000030	Wise Recycling	Axton	Scrap and Waste Material

Table 4.15.2 Active NPDES/VPDES Permits (Point Source Discharges) in Patrick County

Permit #	Facility Name	Town/City	Type
VAG830254	Lynn Williams Rental Property	Patrick	Petroleum
VAR050751	Griffith Lumber Company Incorporated	Woolwine	Industrial Storm Water
VAR050192	Hutchens Petroleum	Stuart	Industrial Storm Water
VAR050715	Narroflex Inc	Stuart	Industrial Storm Water
VAR051541	Patrick Co Solid Waste Transfer & Closed Landfill	Stuart	Industrial Storm Water
VAR050152	Pilson Brothers Lumber Company Incorporated	Stuart	Industrial Storm Water
VAR050434	RotoMetrics Virginia	Meadows of Dan	Industrial Storm Water
VAR050387	Stuart Flooring Corporation	Stuart	Industrial Storm Water
VA0090174	Green Acres Mobile Home Park	Woolwine	Sewerage Systems
VA0001554	Hanes Brands Inc.	Woolwine	Knit Outerwear Mills
VA0092207	Primland Resort LTD	Meadows of Dan	Sewerage Systems
VA0022985	Stuart STP	Stuart	Sewerage Systems
VA0055336	Stuart WTP	Stuart	Water Supply

Table 4.15.3 Active NPDES/VPDES Permits (Point Source Discharges) in Pittsylvania County

Permit #	Facility Name	Town/City	Type
VAG830120	T & T Petroleum Station No. 2	Ringgold	Petroleum
VAG840069	Vulcan Construction Materials - Chatham	Chatham	Non-metallic Mineral Mining
VAR050768	Abercrombie LP Gas	Danville	Industrial Storm Water
VAR051255	Chatham Oil Co - Chatham Bulk Plant	Chatham	Industrial Storm Water
VAR050754	Cloverdale Lumber Co Inc	Sutherlin	Industrial Storm Water
VAR050450	Columbia Forest Products - Chatham	Chatham	Industrial Storm Water
VAR050211	Con Way Freight NDN	Danville	Industrial Storm Water
VAR051620	Dons Auto Recycling Incorporated	Danville	Industrial Storm Water
VAR050216	First Piedmont Corp	Ringgold	Industrial Storm Water
VAR050386	First Piedmont Corp - Ringgold	Ringgold	Industrial Storm Water
VAR051229	Fulghum Fibres Inc former MeadWestvaco Cascade	Cascade	Industrial Storm Water
VAR050388	Intertape Polymer Corporation	Danville	Industrial Storm Water
VAR051591	Lester Auto Parts	Danville	Industrial Storm Water
VAR050412	M Kendall Lumber Co Inc	Blairs	Industrial Storm Water
VAR050521	Owens-Brockway Glass Container Inc - Ringgold	Ringgold	Industrial Storm Water
VAR051524	Pittsylvania Co - Sanitary Landfill	Dryfork	Industrial Storm Water
VAR050390	Roy N Ford Inc	Blairs	Industrial Storm Water
VAR050151	Sartomer Company Inc	Chatham	Industrial Storm Water
VAR050205	Saunders Lumber Company Incorporated	Chatham	Industrial Storm Water
VAR051794	Swedwood Danville LLC	Danville	Industrial Storm Water
VAR050465	Times Fiber Communications Inc	Chatham	Industrial Storm Water
VAR051493	Waste Management Danville Transfer Station	Danville	Industrial Storm Water
VAR051648	Yorktowne Cabinetry Incorporated	Ringgold	Industrial Storm Water
VAG110114	Bobs Car Cleaning	Danville	Car Wash

Permit #	Facility Name	Town/City	Type
VAG110208	Dallas Car Wash	Chatham	
VAG402031	Patterson, Richard Residence	Chatham	Domestic Sewage
VAG407210	Stevens Joseph Residence	Chatham	
VAG402084	Taylor Tract	Java	
VAG830217	Austin Brothers	Danville	Petroleum
VAG110114	Chandler Concrete of Virginia Incorporated	Chatham	Concrete
VAG110208	Danville Ready Mix LLC	Danville	Concrete
VAR050162	Abercrombie Oil Company	Danville	Industrial Storm Water
VAR050497	Columbia Forest Products - Columbia Flooring	Danville	Industrial Storm Water
VAR050198	DanChem Technologies Inc	Danville	Industrial Storm Water
VAR051363	Danville - Public Works Complex	Danville	Industrial Storm Water
VAR051365	Danville - Utilities Services Complex	Danville	Industrial Storm Water
VAR051364	Danville City - Northside	Danville	Industrial Storm Water
VAR050750	Danville Regional Airport	Danville	Industrial Storm Water
VAR051756	Hiatts Used Auto Parts	Danville	Industrial Storm Water
VAR050210	Knight Celotex Fiberboard	Danville	Industrial Storm Water
VAR050517	Nestle' Confections and Snacks Division	Danville	Industrial Storm Water
VAR050518	Nestle USA - Culinary Division Inc Wyatt Warehouse	Danville	Industrial Storm Water
VAR051761	Oakes Auto Parts Inc	Danville	Industrial Storm Water
VAR051261	Shorewood Packaging Corporation of Va - Danville	Danville	Industrial Storm Water
VAR050212	Trade Street Used Auto & Truck Parts	Danville	Industrial Storm Water
VAR050505	United Parcel Service Inc - Danville	Danville	Industrial Storm Water
VAR050389	UPS Ground Freight Incorporated	Danville	Industrial Storm Water
VAR050979	W Henry Hardy Inc - Danville	Danville	Industrial Storm Water
VAG750122	Ferrell Car Wash	Danville	Car Wash
VAG110155	Chandler Concrete of Virginia Incorporated	Danville	Concrete
VA0087106	AEP – Lees	Hurt	Electric Services
VA0088765	AEP – Smith	Sandy Level	Electric Services
VA0001678	Burlington Industries – Hurt	Hurt	Finishers of Broadwoven Fabrics of Manmade Fiber and Silk
VA0023442	Chatham Diversion Center	Chatham	Sewerage Systems
VA0020524	Chatham STP	Chatham	Sewerage Systems
VA0052841	Colonial Pipeline Co.	Blairs	Refined Petroleum Pipelines
VA0001309	Cook Composites and Polymers	Chatham	Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers
VA0063843	Gretna STP	Gretna	Sewerage Systems
VA0006513	Gretna WTP	Gretna	Water Supply
VA0027685	Pittsylvania Co. – Dan River High School	Ringold	Sewerage Systems
VA0027707	Pittsylvania Co. – Mount Airy Elem. School	Gretna	Elementary and Secondary Schools
VA0027693	Pittsylvania Co. – Tunstall High School	Dry Fork	Sewerage Systems

Permit #	Facility Name	Town/City	Type
VA0027715	Pittsylvania Co. – Union Hall Elem. School	Chatham	Elementary and Secondary Schools
VA0083399	Pittsylvania Power Station	Hurt	Electric Services

4.16 Other Potential Threats to the Existing Water Quantity and Quality

Geologic Events

The Virginia Department of Emergency Management (VDEM) has identified geologic events that may occur throughout the Commonwealth including earthquakes, landslides, sinkholes, shoreline erosion, and other geologic hazards. However, the VDEM is not responsible for tracking geologic events throughout the Commonwealth; their primary goal is to provide emergency preparedness during such events. The presence or increased likelihood of geologic hazards such as these is dependent on the underlying geology or soil type. In some instances, geologic hazards are exacerbated by human activities.

Virginia has a moderate earthquake risk, though major faults and high-strain zones are mapped throughout the Commonwealth. Portions of three major fault or high-strain zones are mapped within or near the region: Bowens Creek fault, Dan River Basin, and the Brookneal zone. Earthquakes in Virginia are tracked at the Virginia Tech Seismological Observatory (VTSO) at Virginia Tech in Blacksburg, Virginia. According to a representative from the VTSO, earthquakes with a magnitude of 5.0 or greater have the potential to affect water resources, primarily residential drinking water wells. Over 160 earthquakes have occurred in Virginia since 1977 with only 16% of those with magnitudes sufficient to be felt. Only one earthquake is documented greater than 5.0 in Virginia, which occurred on May 31, 1897 in Giles County and registered as a magnitude 5.8.

Landslides can occur throughout the Commonwealth primarily on steep slopes, such as those of the Blue Ridge Mountains. Additionally, human activities such as slope modification or drainage alteration may increase the likelihood of landslides. A source of landslide tracking throughout the Commonwealth could not be identified and is not conducted by DMME as a geologic hazard. Regional VDOT residencies may have specific local landslide data along major roadways and highways. Various colleges and universities in the state have also conducted

research on active and ancient landslides. Unfortunately, no central database of this information exists.

Based on the review by VDEM, the most likely area for sinkhole formation and subsidence is in the Valley and Ridge province and limited areas of the Piedmont province. However, areas over underground mines are also susceptible to sinkhole formation. These areas are primarily located outside the region, except as identified in Section 4.11 on abandoned mines.

Shoreline erosion can occur along rivers and lakes within the region. Shoreline erosion along rivers and lakes can be reduced if sufficient riparian buffers exist (see section 4.13). The USDA NRCS Web soil survey identifies a general acreage of surface water in each locality as described in the following table.

Table 4.16.1 Surface Water Acreages from USDA Soil Survey

Survey Area	Acreage in Survey Area	Percent of Survey Area
Henry County	2,321	0.9
Patrick County	2,484	0.8
Pittsylvania County	2,900	0.4

Other hazards including expansive soils, frost heave, and radon emission are typically localized, but may exist in the region.

Water Quality Assessments

Chapter 5.1 of the 2008 Final 305(b)/303(d) Water Quality Assessment Integrated Report discusses groundwater protection standards. The Piedmont Physiographic Province, where the majority of the region lies, is identified with a diverse geology with a wide range of groundwater quality and availability. This area is noted as having a low to moderate pollution potential. The Blue Ridge Physiographic Province including portions of Patrick County is identified with impervious rock types and low well yields. Pollution potential is high because of rapid movement of water in fractures. A number of state programs exist in an effort to reduce potential impact to water resources. These include: wellhead protection programs; the Groundwater Management Act of 1992; the Storage Tank Compliance Program; the Storage Tank Remediation Program; Waste Permitting; Remediation Programs; the Pesticide Disposal Program; Pesticides and Groundwater Management; the Karst Program; and the Source Water Assessment Program.

Environmental Management

A number of environmental management practices are tracked through state regulatory agencies and the USEPA including air permits, toxic release reporting, hazardous waste activities including superfund sites, and water discharges. The USEPA EDW maintains a listing of these sites; the following tables provide a breakdown by county. Mapping of these facilities can be found on the USEPA EDW interactive mapper through the USEPA website.

Table 4.16.2 Environmental Management Sites in Henry County

Air	
Facilities that produce and release air pollutants.	115
Toxics	
Facilities that have reported toxic releases.	26
Waste (see note below)	
Facilities that have reported hazardous waste activities.	71
Number of Large Quantity Generators	8
Number of Small Quantity Generators	17
Number of Transporters	1
Number of Treatment, Storage, or Disposal Facilities	1
Potential hazardous waste sites that are part of Superfund that exist.	2
Sites not on the National Priority List (NPL).	1
Facilities that generate hazardous waste from large quantity generators.	0
Water	
Facilities issued permits to discharge to waters of the United States.	14
Transient Non-Community Water Systems that do not consistently serve the same people (e.g. rest stops, campgrounds, gas stations).	6
Community Water Systems that serve the same people year-round (e.g. in homes or businesses).	21
Non-Transient Non-Community Water Systems that serve the same people, but not year-round (e.g. schools that have their own water system).	2

Table 4.16.2 Environmental Management Sites in Patrick County

Air	
Facilities that produce and release air pollutants.	25
Toxics	
Facilities that have reported toxic releases.	5
Waste (see note below)	
Facilities that have reported hazardous waste activities.	17
Number of Large Quantity Generators	0
Number of Small Quantity Generators	4
Number of Transporters	1
Number of Treatment, Storage, or Disposal Facilities	0
Potential hazardous waste sites that are part of Superfund that exist.	0
Facilities that generate hazardous waste from large quantity generators.	0
Water	
Facilities issued permits to discharge to waters of the United States.	5
Transient Non-Community Water Systems that do not consistently serve the same people (e.g. rest stops, campgrounds, gas stations).	21
Community Water Systems that serve the same people year-round (e.g. in homes or businesses).	2
Non-Transient Non-Community Water Systems that serve the same people, but not year-round (e.g. schools that have their own water system).	13

Table 4.16.2 Environmental Management Sites in Pittsylvania County

Air	
Facilities that produce and release air pollutants.	87
Toxics	
Facilities that have reported toxic releases.	10
Waste (see note below)	
Facilities that have reported hazardous waste activities.	41
Number of Large Quantity Generators	3
Number of Small Quantity Generators	6
Number of Transporters	2
Number of Treatment, Storage, or Disposal Facilities	1
Potential hazardous waste sites that are part of Superfund that exist.	2
Sites currently on the Final NPL.	1
Sites not on the NPL.	3
Facilities that generate hazardous waste from large quantity generators.	0
Water	
Facilities issued permits to discharge to waters of the United States.	14
Transient Non-Community Water Systems that do not consistently serve the same people (e.g. rest stops, campgrounds, gas stations).	27
Community Water Systems that serve the same people year-round (e.g. in homes or businesses).	22
Non-Transient Non-Community Water Systems that serve the same people, but not year-round (e.g. schools that have their own water system).	11

Waste sites listed include those classified as large quantity generators (LQG), small quantity generators (SQG), and transport, storage and disposal (TSD) facilities. A LQG site can generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per

month. A SQG site can generate between 100 kg and 1,000 kg of hazardous waste per month. TSD facilities are those that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. Violations by individual facilities were not reviewed.

Petroleum Releases

Releases of petroleum or regulated substances into the environment, once reported to DEQ, are monitored during characterization and possible remediation of the release. Depending on the nature of the release, impact to surface or subsurface water sources may occur. Release incidences once characterized and/or remediated are considered closed. However, these files may be re-opened and additional activities required if conditions warrant further investigation. Therefore, DEQ tracks active incidents (Open) and inactive incidents (Closed). The following is a summary of petroleum release files from January 1, 1988 to the March 23, 2009 when the data was received by DEQ.

- Henry County – 5 Open Sites, 137 Closed Sites
- Patrick County – 3 Open Sites, 42 Closed Sites
- Martinsville – 0 Open Sites, 95 Closed Sites
- Pittsylvania County – 27 Open Sites, 105 Closed Sites
- Danville – 5 Open Sites, 110 Closed Sites

Voluntary Remediation Sites

The Voluntary Remediation Program (VRP) was designed to encourage hazardous substance cleanups throughout the state. Once completed, land use controls, also known as institutional or engineering controls, may exist for the site. These can include groundwater (GW) restrictions, subsurface excavation (EXC) restrictions, residential development (RES) restrictions, or other restrictions beyond GW, EXC, or RES. The following table identifies the completed and planned VRP sites within the region and any land use controls that exist or are planned.

Table 4.16.5 VRP Sites (Active and Planned)

VRP#	Facility Name	Town/City/County	Land Use Controls
VRP00323	Virginia Glass Products Corporation	Henry County	NONE
VRP00274	A Cleaner World	Martinsville	GW
VRP00420	Pine Products, Inc. (former Dale Lumber Company)	Martinsville	RES
VRP00096	Disston Company	Pittsylvania County	GW RES EXC OTHER
VRP00417	Riverside Cleaners	Danville	Planned Site
VRP00466	Klaff Junk Yard	Danville	Planned Site
VRP00412	Knight-Celotex/Former Masonite Facility	Danville	Planned Site
VRP00526	DanChem Technologies Facility	Danville	Planned Site

Completed and planned VRP site lists dated February 13, 2009 from <http://www.deq.virginia.gov/vrp/public.html>, accessed April 15, 2009.