Chapter 5
Stormwater and Wastewater Programs

5.1 Federal and State Stormwater Programs

The goal of the DWQ stormwater discharge permitting regulations and programs is to prevent pollution from entering the waters of the state via stormwater runoff. These programs try to accomplish this goal by controlling the source(s) of pollutants. These programs include NPDES Phase I and II regulations, HQW/ORW stormwater requirements, and requirements associated with the Water Supply Watershed Program. Currently, there are six general stormwater permits listed for the Watauga River basin (Appendix VI). Phase I or II regulations are not applicable; however, there are a few local governments and/or counties that are affected by other water quality protection programs. Those affected governments and/or counties are listed in Table 6.

5.1.1 NPDES Phase I

Phase I of the EPA stormwater program started with Amendments to the Clean Water Act (CWA) in 1990. Phase I required NPDES permit coverage to address stormwater runoff from medium and large stormwater sewer systems serving populations of 100,000 or more people. There are no NPDES Phase I stormwater permits issued in the Watauga River basin.

Phase I also had requirements for ten categories of industrial sources to be covered under stormwater permits. Industrial activities which require permitting are defined in categories ranging from sawmills and landfills to manufacturing plants and hazardous waste treatment, storage or disposal facilities. Construction sites disturbing greater than five acres are also required to obtain an NPDES stormwater permit under Phase I of the EPA stormwater program.

There were six general stormwater permits issued in this basin under Phase I (Appendix VI). Three of the permitted facilities discharge to Laurel Fork [AU#8-10], and one has been issued a notice of violation (NOV). More information related to the stormwater permits in the Laurel Fork watershed can be found in Section 1.4.2.

5.1.2 NPDES Phase II

The Phase II stormwater program is an extension of the Phase I program. Phase II provides permit coverage for smaller municipalities and includes construction activities down to one acre. The local governments permitted under Phase II will be required to develop and implement a comprehensive stormwater management program that includes six minimum measures:

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

Construction sites greater than one acre will also be required to obtain an NPDES stormwater permit under Phase II of the EPA stormwater program in addition to erosion and sedimentation control approvals.

Those municipalities and counties required to obtain a NPDES stormwater permit under the Phase II rules are identified using 1990 US Census Designated Urban Areas and the results of the 2000 US Census. Currently, there are no municipalities or counties identified as an urban area in the Watauga River basin.

2007 Recommendations
Even though none of the municipalities were identified as federally designated urban areas, DWQ recommends that the local governments and county officials develop stormwater management programs that go beyond the six minimum measures listed for Phase II rules. Implementation of stormwater programs should help reduce future impacts to streams in the basin. To the extent possible, local governments should identify sites for preservation or restoration. DWQ and other NCDENR agencies will continue to provide information on funding sources and technical assistance to support local government and county stormwater programs.

5.1.3 State Stormwater Programs – Sensitive Waters

The State Stormwater Management Program was established in the late 1980s under the authority of the North Carolina Environmental Management Commission (EMC) and North Carolina General Statute 143-214.7. This program (Administrative Code 15A NCAC 2H .1000) affects development activities that require either (1) an Erosion and Sediment Control Plan (for disturbances of one or more acres) or (2) a CAMA major permit within one of the 20 coastal counties and/or development draining to Outstanding Resource Waters (ORW) or High Quality Waters (HQW). The State Stormwater Management Program requires developments to protect these sensitive waters by maintaining a low density of impervious surfaces, maintaining vegetative buffers and transporting runoff through vegetative conveyances. Low-density development thresholds vary from 12 to 30 percent built-upon area (impervious surface) depending on the classification of the receiving stream. If low-density design criteria cannot be met, then high density development requires the installation of structural best management practices (BMPs) to collect and treat stormwater runoff from the project. High-density BMPs must control the runoff from the 1 or 1.5-inch storm event (depending on the receiving stream classification) and remove 85 percent of the total suspended solids.

Table 6 shows the counties in the Watauga River basin where permits may be required under the state stormwater management program under the state stormwater rules. All development requiring an Erosion and Sediment Control Plan (for disturbances of one or more acres) must obtain a stormwater permit.

2007 Recommendations
DWQ will continue implementing the state stormwater program with the other NCDENR agencies and local governments. Local governments should develop local land use plans that minimize impervious surfaces in sensitive areas. To the extent possible, communities should integrate state stormwater program requirements with other stormwater programs in order to be

more efficient and gain the most water quality benefits for protection of public health and aquatic life.

Table 6 Communities in the Watauga River Basin Subject to Stormwater and/or Water Supply Watershed Stormwater Requirements

Local Government	State Stormwater Program HQW/ORW	Water Supply Watershed Stormwater Requirements
Municipalities		
Banner Elk		
Beech Mountain		
Boone		**X**
Elk Park		
Seven Devils		
Sugar Mountain		
Counties		
Avery		
Watauga	**X**	**X**

5.1.4 Water Supply Watershed Stormwater Rules

The purpose of the Water Supply Watershed Protection Program is to provide a proactive drinking water supply protection program for communities. Local governments administer the program based on state minimum requirements. There are restrictions on wastewater discharges, development, landfills and residual application sites to control the impacts of point and nonpoint sources of pollution. The program attempts to minimize the impacts of stormwater runoff by utilizing low density development or stormwater treatment in high density areas.

2007Recommendations

The Town of Beech Mountain in the Watauga River basin has EMC approved water supply watershed protection ordinances. DWQ recommends continued implementation of local water supply watershed protection ordinances to ensure safe and economical treatment of drinking water. To the extent possible, communities should also integrate water supply watershed protection ordinances with other stormwater programs in order to be more efficient and gain the most water quality benefits for both drinking water and aquatic life.

5.2 Federal and State Wastewater Programs

5.2.1 NPDES Wastewater Discharge Permit Summary

The primary pollutants associated with point source discharges are:

- oxygen-consuming wastes
- nutrients
- sediments
- color
- toxic substances including chlorine, ammonia and metals.

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as point sources. Wastewater point source discharges include municipal (city and county) and industrial wastewater treatment plants and small domestic wastewater treatment systems serving schools, commercial offices, residential subdivisions and individual homes. Stormwater point source discharges include stormwater collection systems for municipalities and stormwater discharges associated with certain industrial activities. Point source dischargers in North Carolina must apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit. Discharge permits are issued under the NPDES program, which is delegated to DWQ by the Environmental Protection Agency (EPA).

Types of Wastewater Discharges

Major Facilities: Wastewater treatment plants with flows ≥1 MGD (million gallons per day); and some industrial facilities (depending on flow and potential impacts to public health and water quality).

Minor Facilities: Facilities not defined as Major.

100% Domestic Waste: Facilities that only treat domestic-type waste (from toilets, sinks, washers).

Municipal Facilities: Public facilities that serve a municipality. Can treat waste from homes and industries.

Nonmunicipal Facilities: Non-public facilities that provide treatment for domestic, industrial or commercial wastewater. This category includes wastewater from industrial processes such as textiles, mining, seafood processing, glass-making and power generation, and other facilities such as schools, subdivisions, nursing homes, groundwater remediation projects, water treatment plants and non-process industrial wastewater.

Currently, there are 29 permitted wastewater discharges in the Watauga River basin. Table 7 provides summary information (by type and subbasin). The types of dischargers listed in the table are described in the inset box (right). Facilities are mapped in the subbasin chapter, and a complete listing of permitted facilities is included in Appendix VI.

The majority of NPDES permitted wastewater flow is from 24 small package wastewater treatment plants (WWTP). Nonmunicipal discharger contributes only 0.26 percent of the total wastewater flow into the Watauga River basin. Facilities, large or small, where recent data show problems with a discharge are discussed in the subbasin chapter (Chapter 1). This includes the Grassy Gap WWTP (Section 1.4.7), owned and managed by the Town of Beech Mountain.

Table 7 Summary of NPDES Dischargers and Permitted Flows for the Watauga River Basin (April 2006)

Facility Categories	Subbasin 04-02-01
Total Facilities*	29
Total Permitted Flow (MGD)	3.92
Facilities by Type	
100% Domestic Waste	24
Total Permitted Flow (MGD)	2.73
Municipal Facilities	4
Total Permitted Flow (MGD)	1.18
Nonmunicipal Facilities	1
Total Permitted Flow (MGD)	0.01

* Minor Facilities

5.2.2 Septic Systems and Straight Piping

In the Watauga River basin, wastewater from many households is not treated at wastewater treatment plants. Instead, it is treated on-site through the use of permitted septic systems. Wastewater from some of these homes illegally discharges directly to streams through what is known as a "straight pipe". In other cases, wastewater from failing septic systems makes its way to streams or contaminates groundwater. Straight piping and failing septic systems are illegal discharges of wastewater into the waters of the State.

With on-site septic systems, the septic tank unit treats some wastes, and the drainfield associated with the septic tank provides further treatment and filtration of the pollutants and pathogens found in wastewater. A septic system that is operating properly does not discharge untreated wastewater to streams and lakes or to the ground's surface where it can run into nearby surface waters. Septic systems are a safe and effective long-term method for treating wastewater if they are sited, sized and maintained properly. If the tank or drainfield are improperly located or constructed, or the systems are not maintained, nearby wells and surface waters may become contaminated, causing potential risks to human health. Septic tanks must be properly installed and maintained to ensure they function properly over the life of the system. Information about the proper installation and maintenance of septic tanks can be obtained by calling the environmental health sections of the local county health departments. See Appendix VIII for contact information.

The discharge of untreated or partially treated sewage can be extremely harmful to humans and the aquatic environment. Pollutants from illegally discharged household wastewater contain chemical nutrients, disease pathogens and endocrine disrupting chemicals. Fecal coliform bacteria levels were not exceeded for primary recreation at any of the ambient monitoring stations in the Watauga River basin; however, smaller streams not evaluated through the ambient monitoring program may contain a higher concentration of bacteria and other pollutants. The

economies of the counties in this basin are highly dependent upon river recreation, especially from tourists and seasonal residents, and these waters should be protected from straight pipes and/or failing septic systems.

In order to protect human health and maintain water quality, the NC Wastewater Discharge Elimination (WaDE) Program is actively helping to identify and remove straight pipes (and failing septic systems) in western North Carolina. The program uses door-to-door surveys to locate straight pipes and failing septic systems and offers deferred loans or grants to assist homeowners in eliminating straight pipes and repairing septic systems. In November 2005, the WaDE Program was awarded a $1.5 million grant from the North Carolina Clean Water Management Trust Fund (CWMTF) to continue its straight-pipe and failing septic system survey and repair program through April 2009. The new agreement supports survey and repair work in 22 western North Carolina counties, including several that were previously excluded from WaDE efforts. These include Ashe, Avery, Alleghany, Jackson, Madison, Mitchell, and Yancey Counties. Areas normally selected for surveys are public water supply and recreational watersheds, as well as streams targeted by DWQ or the Ecosystem Enhancement Program (EEP).

WaDE will utilize the CWMTF monies to eliminate straight-pipes and failing septic systems across the river basins of western North Carolina following the established and improved survey/repair model. Staffing developments within the statewide system that governs the issuance of septic repair permits should produce a higher rate of repairs than has been experienced in the past. Through these developments, more Registered Sanitarians—those responsible for septic system repair permits—should be available to accomplish the needed corrections.

For more information on the WaDE Program, contact the DENR On-Site Wastewater Section (OSWW), NC Division of Environmental Health, toll free at 1-866-223-5718 or visit their website at http://www.deh.enr.state.nc.us/osww_new//WaDE.htm .

2007 Recommendations

DWQ supports the efforts of the WaDE Program and will assist in identifying potential watersheds for straight pipes and failing septic system surveys. Additional monitoring for fecal coliform bacteria is also recommended in those watershed identify to have straight pipes or failing septic systems. Precautions should be taken by local septic system permitting authorities to ensure that new systems are sited and constructed properly and that an adequate repair area is also available. Educational information should also be provided to new septic system owners regarding the maintenance of these systems over time.

DWQ has developed a booklet that discusses actions individuals can take to reduce stormwater runoff and improve stormwater quality entitled *Improving Water Quality In Your Own Backyard*. The publication includes a discussion about septic system maintenance and offers other sources of information. Contact DWQ for a free copy of the booklet or visit the DWQ website to download the document (www.ncwaterquality.org/Wateryouknow.htm). The following website also offers good information in three easy to follow steps: http://www.wsg.washington.edu/outreach/mas/water_quality/septicsense/septicmain.html.