National Pollutant Discharge Elimination System (NPDES)

Stormwater MS4 Phase II Mandate

The Federal Clean Water Act (CWA) of 1972 established regulatory authority for the protection of surface waters (lakes, rivers, and streams) for designated uses, such as, drinking water, fishing, recreation, and industrial process water. States were required to develop inventories of impaired surface waters or streams, referred to as a "303d list." The CWA amendments of 1987 provided regulatory authority of non-point source or stormwater pollution under the National Pollutant Discharge Elimination System (NPDES), recognizing that urban stormwater runoff was a significant contributor to water pollution. In 1990, the Environmental Protection Agency (EPA) in conjunction with the CWA implemented the Municipal Separate Storm Sewer System (MS4) Phase I stormwater mandate, in urban areas with a population of 100,000 or more (Chattanooga, Knoxville, Memphis, and Nashville). In 1999, EPA adopted the MS4 Phase II rules, which included all urban areas having of a total population of at least 50,000, and a population density of 1,000 people per square mile as determined by the Bureau of the Census. The CWA amendments provided regulatory permit authority under the NPDES program for EPA to address urban stormwater discharges. A listing of governmental entities that is located either fully or partially within an urban area and subject to the stormwater MS4 Phase II rule is published in the Federal Register (64 FR 687220), and includes Knox County. There are 85 cities and counties in Tennessee subject to the MS4 Phase II mandate.

The table below identifies streams that flow through Knox County's jurisdiction or within two miles downstream of Knox County's boundaries that are impaired according to the State's 303(d) report. These streams are all affected by the Knox County's stormwater run-off.

Stream Name	Cause of Impairment	Source of Impairment
Grable Branch	oil and grease siltation other habitat alterations	minor industrial point source channelization industrial permitted runoff urban runoff/storm sewer
Hines Branch	other habitat alterations	urban runoff/storm sewer
Knob Fork	siltation other habitat alterations	urban runoff/storm sewer
Grassy Creek	siltation	land development
Meadow Creek	siltation	land development
Beaver Creek	phosphorus nitrate pathogens siltation other habitat alterations	major municipal point source pasture grazing land development
Williams Branch	siltation	industrial permitted runoff

Foster Branch	siltation	industrial permitted runoff
North Fork Bullrun Creek	unknown toxicity	minor municipal point source
Bullrun Creek	siltation other habitat alterations pathogens	pasture grazing channelization
Third Creek	pathogens nutrients siltation other habitat alterations	collection system failure land development hydromodification urban runoff/storm sewer
Whites Creek	other habitat alterations	urban runoff/storm sewer
First Creek	pathogens nutrients siltation other habitat alterations	collection system failure urban runoff/storm sewer hydromodification
Second Creek	other habitat alterations pathogens nutrients siltation	urban runoff/storm sewer collection system failure hydromodification
Sinking Creek	pathogens	urban runoff/storm sewer
Turkey Creek	nutrients siltation	land development
Fourth Creek	other habitat alterations	urban runoff/storm sewer channelization
Williams Creek	other habitat alterations pathogens	urban runoff/storm sewer
Baker Creek	other habitat alterations pathogens	urban runoff/storm sewer
Goose Creek	pathogens siltation other habitat alterations PCBs	collection system failure urban runoff/storm sewer hazardous waste
Love Creek	siltation other habitat alterations	land development
Roseberry Creek	pathogens	pasture grazing septic tanks
Swampond Creek	siltation other habitat alterations	land development channelization
Little Flat Creek	pathogens	livestock in stream
Flat Creek	siltation other habitat alterations	hydromodification dam construction
Fort Loudon Reservoir	PCBs	contaminated sediment
Gallagher Creek	siltation	pasture grazing
Stock Creek	siltation	pasture grazing

	other habitat alterations	channelization
Roddy Branch	siltation other habitat alterations	pasture grazing channelization removal of riparian vegetation urban runoff/storm sewer

Shaded cells indicate a stream or water body that is located within the city of Knoxville	

The stream locations and urban growth increase the potential impacts. Storm water runoff from lands modified by human activities can harm surface water and cause or contribute to exceeding amounts of water quality standards by changing where water naturally flows and how fast it flows, destroying aquatic habitat, and increasing pollutant concentrations and loadings. Common pollutants include oil and grease from roadways and parking lots, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles.

Urban development increases the amount of impervious surface in a watershed as farmland, forests, and meadowlands are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb stormwater. Storm water and snowmelt runoff wash over impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground.

MS4 Definition (What is regulated?)

An MS4 means a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains owned or operated by a State, city, town, county, or other public body created by or pursuant to State law, designed or used for collecting or conveying stormwater.

MS4 Phase II Regulated Urban Area

The total area in Knox County subject to the stormwater MS4 Phase I and Phase II mandate is 526 square miles, and includes five jurisdictions:

1) Farragut
2) City of Knoxville
3) Knox County
4) Pellissippi State Technical Community College Hardin Valley
5) University of Tennessee at Knoxville - MS4

MS4 Phase II Permit

Knox County prepared the required TDEC notice of intent (March 2003 deadline) to obtain coverage under a general NPDES permit for MS4 discharges, as mandated. In February 2003, TDEC issued a general NPDES permit for 85 municipalities in Tennessee required to operate MS4 Phase II programs.

The NPDES permit governing the stormwater program operations of Knox County has a definitive beginning date of February 27, 2003 and an expiration date of February 26, 2008. Upon expiration of the current NPDES 5-year permit, TDEC will revise and modify the permit conditions to satisfy CWA requirements. The first permit term for MS4 Phase II municipalities is 2003-2008 (5 years), and is dedicated to phasing in or starting the local stormwater programs. In 2007, Knox County was required to submit an application to renew permit coverage.

The NPDES permit for each MS4 has six minimum measures which must be addressed and for each minimum measure Knox County has developed four or five Best Management Practices (BMPs) for each of the six minimum measures. In addition to the permit BMPs, there are also requirements related to the presence of 303d streams that require mandated inspections of all construction activity on a once per month frequency. The permit tasks are phased in annually through 2007 and become a permanent or reoccurring part of the MS4 Phase II program. All BMPs for each minimum measure must be fully implemented by March 7, 2007 pursuant to the Federal Register, 40CFR122.