

RECOMMENDATIONS

- » **Implement Proactive Local Planning and Policies:** Planning should focus on resource protection and reduction of impervious surface as local agencies coordinate with statewide plans and organizations.
- » **Complete Stormwater Inventories and Assessments:** Municipalities should inventory their stormwater system to gather specific location, size and structural dimensions and condition information on all stormwater conveyance elements. Available technologies should be used such as Geographical Information Systems (GIS) and computerized asset management programs to allow for efficient use of the data. This will allow for the creation of stormwater management plans, comprehensive master plans, system maps and watershed models.
- » **Increase Inspection and Maintenance:** Communities need to regularly inspect and maintain their stormwater infrastructure. Communities with MS4 permits are required to inspect a percentage of their stormwater structures annually. Stable, dedicated funding sources are needed to provide for effective maintenance programs.

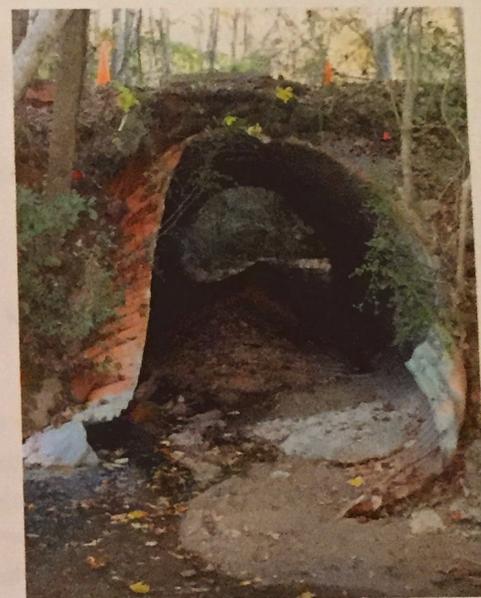
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DEFINITION OF THE ISSUE

Stormwater is the runoff generated when precipitation flows over land or impervious surfaces and does not percolate into the ground. Through this "run-off" process, it accumulates debris, chemicals, sediment or other pollutants that can have an adverse impact downstream. In addition, impervious surfaces change the rate and volume of water entering streams and lakes. This change in quantity may increase flooding and decrease baseflow.

In Georgia, stormwater is managed through natural conveyances and manmade infrastructure. Some are owned and managed by local governments, some by private property owners. If certain thresholds are met, stormwater is managed and regulated under National Pollutant Discharge Elimination System (NPDES) Permits in the following categories:

- Urban (152 cities and counties permitted by the Georgia Environmental Protection Division (EPD) through Municipal Separate Storm Sewer System (MS4) permits, others considered non-point sources)
- Industrial (2,600 industries permitted by EPD, others considered non-point sources)
- Construction (land disturbance over 1 acre covered by one of three general permits)
- Agricultural (certain activities permitted, other considered non-point sources)



If a stormwater discharge does not meet the above criteria, it is considered a non-point source of pollution and is not regulated by the State of Georgia. Non-point sources of pollution are those that are difficult or impossible to regulate such as fertilizer and insecticide from residential yards; oils and other pollutants from roadways or parking lots; and sediment from eroding land or stream banks.

GRADE

The Georgia Section of ASCE has assigned Stormwater a 2014 grade of D+. The grade remains unchanged since 2009. The majority of cities and counties in Georgia lack adequate funding to maintain their stormwater infrastructure and few have a dedicated funding source such as a stormwater utility. However, there have been some improvements in stormwater management in the last 5 years, including the addition of approximately 10 stormwater utilities. Stormwater utilities provide a dedicated local funding source for stormwater maintenance activities within a local jurisdiction. Several of these stormwater utilities are located in areas not covered by urban municipal stormwater permits, indicating an awareness of the importance of stormwater beyond meeting regulatory requirements.

CONDITION

Stormwater infrastructure consists of conveyance components such as pipes and streams; storage components such as lakes, ponds and wetlands; and structures such as catch basins, junctions and weirs. Green infrastructure such as buffers, riparian corridors and filter strips are also part of the stormwater system. Stormwater infrastructure can convey not only stormwater runoff but also pollutants (such as sediment) that can reduce the capacity of conveyance systems and storage facilities. Sediment and fecal coliform, an indicator of potential pathogens, are the most commonly identified pollutants in Georgia streams.

Many local governments are struggling to maintain their stormwater pipes and structures. As these structures age, they require inspection and maintenance. If not repaired in a timely manner, roads can collapse, and flooding and sinkholes can occur, significantly impacting public safety. Due to the NPDES and MS4 permitting program, many local governments are creating an inventory of their stormwater infrastructure and some are even assessing condition as part of a proactive maintenance program.

A fully functioning stormwater infrastructure system is essential to operation that is safe for the public. Maintenance of stormwater systems should include regular inspections and, if necessary, removal of accumulated pollutants, especially sediment. Enforcement is limited due to a lack of funds and personnel and is complicated by factors such as transfers of property ownership and ongoing maintenance contracts.

Stormwater best management practices (BMPs) can minimize the water quality and quantity impacts that can be associated with stormwater. The following resources are available for stormwater management:

- Georgia Stormwater Management Manual, published in 2001
- Coastal Supplement to the Georgia Stormwater Management Manual, April 2009
- Manual for Erosion and Sediment Control in Georgia, Fifth Edition, 2000
- Georgia's Best Management Practices for Forestry, May 2009
- Water Quality Best Management Practices for the Aggregate Mining Industry, May 2009

CAPACITY

Georgia stormwater conveyance and treatment facilities have been installed over many years with a variety of design criteria. As stormwater runoff tends to increase with development, the capacity of some systems no longer meets the demand in growing urban areas. Local governments need to assess which systems need increased capacity in addition to evaluating maintenance needs. In addition, the water quality component of stormwater management infrastructure only began to be required in 2001; so much existing infrastructure does not significantly address water quality components.

REGULATORY FRAMEWORK

Urban stormwater includes runoff in developed areas of cities and counties. These systems are regulated by MS4 permits administered by EPD for the U.S. Environmental Protection Agency (EPA). The NPDES program is mandated through the Clean Water Act and focuses on water quality. There are two regulating NPDES permits, depending on the size of the municipality. There are 58 Phase 1 communities and 94 Phase 2 communities. Phase 1 applies to municipalities serving a population over 100,000 and Phase 2 applies to municipalities serving a population less than 100,000. Additionally, the Georgia Department of Transportation was issued a MS4 permit in 2011. Although the format of these permits is different, the basic requirements are the same: communities are required to develop a stormwater management plan that is based on a set of BMPs. EPD requires the adoption of stormwater design standards similar to the Georgia Stormwater Management Manual. EPD's audit process on the NPDES and MS4 programs ensures compliance and progress. Without strong urging through compliance, progress toward water quality improvement will not happen.

These activities are funded by local government tax funds or by local stormwater utilities through user fees. Some of the stormwater infrastructure in these areas is privately owned by individual land owners or homeowner's associations, making management and maintenance challenging.

The most current MS4 permit, adopted December 2012, removes the requirement for Phase 2 permitted municipalities to inspect privately owned stormwater management facilities designed prior to December 2008. The requirement to recommend retrofits for flood control on these older facilities was also removed from the most recent permit. These

RECOMMENDATIONS

- » **Increase Public Education:** State and local governments should increase efforts to educate their residents providing increased awareness of stormwater infrastructure and its direct connection to streams, rivers and lakes. Additionally, education programs can inform citizens about the impacts that individual behaviors can have on water quality and stream flow. The Clean Water Campaign, managed by the Atlanta Regional Commission, serves as a model of a collaborative education effort.
- » **Improve Watershed Protection Through Better Land Use Practices:** Watershed protection can be obtained through BMPs and improved land use strategies. Land use management that includes greenspace preservation, low impact development patterns, green infrastructure and other innovative land use practices that improve stormwater management should be encouraged.
- » **Consider Stormwater Authorities:** Georgia EPD will likely establish more stringent requirements to address specific pollution problems through Total Maximum Daily Load (TMDL) strategies aimed at watershed protection. Enabling statewide legislation for stormwater authorities could lead to stormwater utilities addressing inter-jurisdictional issues because of watersheds that cross county and city boundaries.

relaxations of the inspection requirements will hurt municipalities two-fold. Municipalities with established inspection programs that included older privately owned ponds no longer have the backing of the state to justify funding the inspection program. Additionally, these same municipalities were previously required to retrofit the older ponds to better control flooding and improve water quality. These older ponds generally have neither routine maintenance requirements nor water quality control and channel protection requirements and are usually the ones causing the most damage to the overall system.

Industrial facilities meeting certain criteria are regulated through the Industrial Stormwater General permit, updated in 2013. In Georgia, approximately 2,600 industries are covered by this permit. The General Permit requires these regulated facilities to adopt a Stormwater Pollution Prevention Program which contains BMPs aimed at creating a cleaner facility with respect to the stormwater leaving their facility. The permit also requires an extensive stormwater sampling program be implemented to continuously monitor the quality of stormwater leaving the facility.

CONDITION

Streams and lakes throughout Georgia are used for fishing, recreation and drinking water. The pollutants that stormwater water accumulates can impact these uses. Currently in Georgia, 38 percent of the 13,899 miles of streams and rivers, 59 percent of the 393,348 acres of lakes and reservoirs, 84 percent of the 79 square miles of sounds/ harbors, and 70 percent of the 415 miles of coastal rivers and streams assessed by the Georgia Department of Natural Resources were found to fully support their designated use. Stream segments in Georgia equaling approximately 8,145 miles are listed as impaired by violating at least one water quality criteria and as such, do not meet their designated uses. Stormwater runoff from urban areas and non-point sources account for 99 percent of the violations for rivers and streams and over 55 percent of the violations for lakes and reservoirs.

FUNDING

Funds are needed for stormwater infrastructure construction, operations, inspection, maintenance, educational programs, regulatory coordination and other activities. Funding may come from:

- Local government tax funds
- Stormwater utility revenue
- Private property investment
- State revolving fund loans to local governments
- Clean Water Act 319(h) grants for nonpoint source projects
- Environmental Quality Initiatives Program (EQIP) financing through the USDA

Alternative funding methods for stormwater management programs include general obligation bonds, development impact fees, formation of special assessments or tax districts and the creation of user fees through stormwater utilities.

A stormwater utility, like a sewer or water supply utility, has user fees. These fees are allocated based on impervious surface such as roofs, driveways, park-

ing areas and sidewalks. Currently, Georgia has approximately 44 stormwater utilities. As a comparison, there are more than 100 stormwater utilities in Florida and more than 500 throughout the United States. Stormwater utility fees can be used for activities related to water quality and quantity and their impacts on natural resources, as well as maintenance of failing infrastructure such as pipes and dams.

Georgia EPD delegates Section 319(h) grant funds of approximately \$4.5 million annually to local governments for projects that address non-point source water quality. The Georgia Environmental Finance Authority (GEFA) provides grants and low interest and state revolving loans. Since 2010, the federal Clean Water State Revolving Fund administered by GEFA has included a green infrastructure program that includes projects to manage wet weather flows and maintain and restore natural hydrology by infiltrating, evapotranspiring and harvesting. It also includes bioretention, green roofs, urban forestry, permeable pavements, cisterns, establishment or restoration of permanent riparian buffers, floodplains, wetlands and other natural features.

FUTURE NEED

In general, communities lack funding to maintain their stormwater pipe systems. When a community does not have a dedicated funding source, such as a stormwater utility, it must rely on general tax funds. Stormwater programs must compete with police, fire, parks and other community services for funding. Community leaders must decide where to spend very limited public dollars and often times stormwater system upgrades do not make the final list of funded projects. Inspection programs have increased as a result of MS4 permit requirements in turn increasing the amount of already limited funding required to maintain these programs. Communities have made limited use of the loan programs. Georgia should encourage more communities to look holistically at water issues and recognize the connection between stormwater, wastewater and drinking water. Funding stormwater programs can assist with water supply and water quality issues more frequently associated with wastewater and drinking water permits.

PUBLIC SAFETY AND RESILIENCE

Stormwater is closely connected to dam safety discussed elsewhere in the Report Card. Failing dams and undersized stormwater infrastructure may exacerbate flooding problems, impacting public safety. In addition, failing pipes can cause sinkholes in yards and collapsed roadways.

In October 2013, a collapsed storm structure and its subsequent repair closed lanes on I-85 in downtown Atlanta for several days. This serves as a great example of the interconnectedness of infrastructure and the importance of funding the whole system.

Since it is not economically feasible to design for all storm events, most pipes and detention ponds are designed for up to a 25- or 100-year storm event. Rare storm events, such as the extreme rain events in Douglas County and the metro Atlanta area in September 2009, may exceed the capacity of these structures, resulting in flooding and damage. For these cases, local governments should have disaster mitigation plans to quickly respond and restore affected areas.

SOURCES

Atlanta Regional Commission, Georgia Stormwater Management Manual, August 2001.

<http://www.georgiastormwater.com/>

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Metropolitan North Georgia Water Planning District, Watershed Management Plan, May 2009. <http://www.northgeorgiawater.com/watershed.htm>