FORWARD - BACKGROUND & BASIS FOR MANUAL

Water Quality Issues

Since the passage of the Clean Water Act (CWA), the quality of our Nation's waters has improved dramatically. Despite this progress, however, degraded water bodies still exist. According to the 1996 National Water Quality Inventory, a biennial summary of State surveys of water quality, approximately 40 percent of surveyed U. S. water bodies are still impaired by pollution and do not meet water quality standards. A leading source of this impairment is polluted stormwater runoff. In fact, according to the Inventory, 50 percent of impaired rivers in the U. S. are affected by urban/suburban and construction sources of storm runoff.

Tennessee has approximately 60,200 stream miles and 537,000 publicly-owned lake acres within its boundaries. All of the streams and lakes in Tennessee are classified, at minimum, for fish and aquatic life and recreation (TDEC, 2000), in concert with Congress' national goal that all waters be both "fishable and swimmable." The 2000 305(b) water quality assessment report for Tennessee indicates that, for the 40 percent of the streams that have been assessed to date, almost a third of Tennessee's streams still do not fully support designated uses for aquatic life and recreation (TDEC, 2000). Of the approximately 99% of the lake and reservoir areas that have been assessed, about 7 percent have impaired water quality for supporting aquatic life and about 20 percent have recreational impairment. While no single cause of stream and river impairment is dominant, conventional pollutants such as siltation, suspended solids, nutrient enrichment and organic enrichment/low dissolved oxygen affect the most river miles. Major sources of these pollutants are agricultural activities, hydro-modification, as well as municipal point sources. Other sources of impairment include urban runoff/storm sewers, construction activities, and industrial point sources.

This manual provides general guidance in developing and implementing *post-construction* best management practices (BMPs) for both stormwater runoff quality and quantity (flow) in the designated small Phase II stormwater communities in Tennessee. Currently, there are 47 cities and counties in Tennessee that are subject to the Phase II program, because they are specifically listed in the EPA rule and because part or all part of the local government Municipal Separate Storm Sewer Systems (MS4s) are in urbanized areas having minimum residential populations of 50,000 people and a minimum average density of 1,000 people/square mile.

In addition, the EPA Phase II rule mandates that the State of Tennessee NPDES permitting authority (PA), the Department of Environment and Conservation (TDEC), examine small MS4s outside of urbanized areas having 10,000 or more population and densities of at least 1000/square mile, to evaluate whether stormwater discharges result in, or have the potential to result in, exceedances of water quality standards. Approximately 23 Tennessee communities fall into this category.

Other cities with populations over 10,000, regardless of population density, are also being examined by the State. At least 4 cities fall into this category. Additional areas where population growth rates are high are also being examined because of their future potential for negative impacts on nearby streams if appropriate stormwater management programs are not implemented. Five counties currently fall into this classification.

The reader is referred to TDEC's Phase II stormwater communities in Tennessee for the current listing of which local government MS4s in each of the above urban categories will be regulated. Appendix D lists the most recent Phase II Stormwater Communities in Tennessee, based on the 1990 census data.

While this manual focuses on water quality and quantity issues associated with post-construction development, construction and development activities have been shown to contribute large quantities of sediment and silt to water bodies during precipitation events. A companion manual, Tennessee Erosion & Sediment Control Handbook, has been recently published by TDEC for protecting state waters through the use of BMPs during land disturbing or construction activities (TDEC, 2002).

Water Quantity Issues

Local government officials and private owners have a responsibility to consider both the rules of law for liability for stormwater runoff quantity issues and applicable state and federal requirements related to stormwater quantity at the local level. These requirements and responsibilities are summarized as follows.

Water use rights

Existing water use and drainage law in Tennessee result mainly from judicial decisions stating the application of the common law in this state. There has been little statutory treatment of individual rights and obligations. The doctrine of riparian rights, which prevails in most of the eastern United States, is the basis for the existing law of Tennessee for controlling rights to the *use* of water in well-defined streams. As applied in Tennessee it has been referred to as the "reasonable use" doctrine and can be stated as follows (Marquis, et al., 1955):

> ...each riparian owner has an equal right to have the stream flow through his land in its natural channel, without material diminution in quantity or alteration in quality but with this limitation or qualification, however, that each proprietor is entitled to the reasonable use of the water for domestic, agricultural or manufacturing purposes (American Association, Inc. v. Eastern Kentucky Land Co., 2 Tenn. Ch. App. 132, 173 (1901), affirmed by Tenn. Sup. Ct. without modification).

Rights to natural stream flow in Tennessee are reinforced in another early case:

> The owner of land, across or over which a stream of water flows, has a right to have it flow over his land in its natural channel, without unreasonable detention, undiminished in quantity, and unimpaired in quality, except so far as it inseparable from a reasonable use of the water of the stream for the ordinary and useful purposes of life by those above him on the stream. (Tenn. 1901, Cox v. Howell, 65 S.W. 868, 108 Tenn. 130, 58 L.R.A. 487)

Drainage law

Many of the controversies over water issues in Tennessee have arisen when excessive water flowing from one owner's property is allowed to physically *invade and damage* another's property, rather than over a riparian owner's *right* to use the water. Cases include the flooding of upper land by the backwater from construction of dams or other obstructions; liability is generally imposed in such cases, except for injuries caused solely by floods which are so great as to be unforeseeable and to constitute acts of God (Hurley v. American Enka Corp., 1950). A large group of cases involve pollution, where the courts have consistently followed a strict rule of liability if the pollution results in material injury (H. B. Bowling Coal Co. v. Ruffner, 1906).

The consequences from *excessive* stormwater runoff can be immediate and devastating, resulting in flooding and damages to lower or adjacent lands. Common law generally divides stormwater runoff into two categories: surface water and natural watercourses. Surface water is defined as water that falls to the ground from the sky, diffuses as overland flow on the surface of the land, and follows no defined course or channel. Surface water can also include that which arises from springs. Some or all surface water may be lost by being dispersed over the ground through infiltration and evaporation. After surface water has become part of a stream in a watercourse, the runoff is no longer defined as surface water and the courts generally no longer recognize it as surface water.

A natural watercourse is a channel with a defined bed and banks through which water normally passes as a body or stream during the seasons and at times when streams in the region usually flow. Alterations to a natural watercourse, such as the construction of conduits or other improvements in the bed of the stream, do not generally affect its status as a natural watercourse.

Typically, three basic common law rules govern liability for stormwater drainage and runoff: (1) the civil law rule, which prohibits interference with the natural flow of surface water; (2) the common enemy rule, under which each property owner can fight the water problem the best way he can; and (3) the reasonable use rule, which permits a lower property owner to make "reasonable" alterations to protect against excessive stormwater runoff, in hardship situations where strict application of the civil law rule might prevent the lower landowner from improving his land or using it as he would

otherwise have a right to use it.

With respect to damage from hostile surface waters, Tennessee, along with several other states, generally adheres to the civil law rule that accords the owner of higher land an easement for the drainage of surface water across lower land to which it naturally flows and forbids any injurious interference or obstruction with such flow by the lower owner (Thomas, et al, 1998; Louisville & N. RR. V. Hays, 1883). As part of this rule, it is held that the upper owner cannot artificially increase the natural quantity of water or change its natural manner of flow by collecting it and discharging it upon the lower land at a different place or in a different manner from its natural discharge (Louisville & N. R. R. v. Hays; Slatters v. Mitchell, 1938).

The civil law rule in Tennessee has been upheld in several cases involving issues such as drainage easements; obstructions; artificial and general drainage; natural drainage and watercourses; diversion, overflow, breakage or seepage; pollution; and artificial ponds, reservoirs, and channels and dams. Court decisions relating to drainage cases, which reinforce the civil law rule application to natural water courses and surface waters in Tennessee, are cited and summarized in the appendix of this manual.

Municipal permits

The issue of a municipality's liability arising out of creating a nuisance is documented in cases relating to sewer construction (City of Columbia v. Leintz, 39 Tenn. App. 350, 282 S. W. 2d 787 (1955) and Kolb v. mayor of Knoxville, 111 Tenn. 311, 76 S. W. 823 (1903). However, judicial decisions do not generally hold municipalities responsible in their power to grant or deny building permits and resulting actions of private enterprises (Miller v. City of Brentwood, 548 S. W. 2d 878 (Tenn. App. 1977) and Zollinger v. Carter, 837 S. W. 2d 613 (Tenn. App. 1992).

For example, in Miller v. City of Brentwood, it was held that,

[I]n spite of the recent propensity of some courts to undertake to supervise and direct the activities of other branches of government, none has yet been so bold as to hold a local government liable for failure to assure that a building project would not injure its neighbors before issuing a permit for construction.

The court further states that,

. . . no right of action is recognized against a municipality for issuing a permit for construction in accordance with existing laws and regulations. Correspondingly, there is no authority for the Courts to enjoin the issuance of a permit, otherwise lawful, for the reason that its use might result in a private injury.

In Zollinger v. Carter, the court ruled that,

[W]e are of the opinion and hold that approval of the design and acceptance of a drainage

system by a municipality does not absolve a defendant (developer) from liability where it is demonstrated by a preponderance of the evidence that the injury (to adjoining landowner) would not have occurred but for the activities of the defendant.

Local regulation

Tennessee's enabling legislation (T. C. A. 13-701 Amended) empowers local communities to regulate building construction and to allow establishment of special districts and zones for purpose of promoting the health, safety, morals, convenience, order, prosperity and general welfare of the public. Such regulations include, but may not be limited to

- Building codes
- Detention pond ordinances
- Subdivision regulations
- Drainage & stormwater management ordinances
- Stormwater utility districts

When effectively written and enforced, these tools represent potent instruments for managing both stormwater quality and quantity. The appendix contains examples of both model stormwater and utility ordinances (Appendices B and C).

Enforcement of regulations is especially important to effective stormwater management. A recent University of Tennessee study of the performance of 20 stormwater detention ponds in five different regulatory jurisdictions in the Knoxville area showed many technical deficiencies and inconsistencies in both their design and construction (Tschantz and Romans, 1997; Romans, 1997). Most of the problems stemmed from poor or defective construction. For example, 17 of the 20 ponds had storage volumes less than that indicated on the plans and specifications. Some of the differences between design and field conditions were deemed large enough to have a very negative impact on intended performance, and hence, downstream flooding. Several recommendations were made to developers and owners, engineers, the public, and public works officials. Among these recommendations, the study urged local officials to make on-site inspections during construction of detention ponds and to require "As-built" surveys as a quality control measure to confirm that the designer's plans are constructed according to intent to ensure effective performance.

Tennessee laws

The seriousness of water pollution and other water-related problems have produced statutory control administered by state and federal agencies. The following Tennessee laws and standards affect local control and management of stormwater quality and quantity:

A. Safe Dams Act of 1973, TCA, Section 69-12-101, as amended 1991.

This act regulates the design and construction of dams. All dams greater than 20 feet in height or having volumes larger than 30 acre-feet must be approved by the state dam safety office. This act relates to stormwater management in that it limits the size of detention and retention ponds that may be constructed without approval.

B. The Water Quality Control Act, Title 70, Chapter 3, June 27, 1977, as amended 1994.

The purpose of this act is to "abate existing pollution of the waters of Tennessee, to reclaim polluted waters, to prevent the future pollution of the waters, and to plan for the future use of the waters". It also "enables the state to qualify for full participation in the national pollutant discharge elimination system (NPDES) established under Section 402 of the Federal Water Pollution Control Act". To accomplish these goals, the act implements a requirement for a permit before undertaking activities which may affect the waters of the state. These activities include "the alteration of the physical, chemical, radiological, biological, or bacteriological properties of any waters of the state", "the development of a natural resource... the operation of which will or is likely to cause an increase in the discharge of wastes into the waters of the state..", "the construction or use of any new outlet for the discharge of any wastes into the waters of the state", and others. The Water Quality Control Act is important to stormwater management issues because stormwater runoff is a source of pollution which can be regulated under this act.

C. State of Tennessee Water Quality Standards, Rules of the Department of Environment and Conservation, Bureau of Environment, Division of Water Pollution Control, Chapt. 1200-4-1, General Rules; Chapt. 1200-4-3 (General Water Quality Criteria), Chapter 1200-4-4 (Use Classification for Surface Waters), July 1995.

The Tennessee Water Quality Standards were established to fulfill a requirement of the Water Quality Control Act. Tennessee streams are classified according to use into categories such as domestic water supply, recreation, irrigation, and fish/aquatic life. Water quality criteria are established for each use classification and include factors such as dissolved oxygen, temperature, solids, mineral compounds, and toxic substances.

D. Memorandum of Agreement between The Tennessee Dept. of Agriculture and The Tenn. Dept. of Environment and Conservation, Division of Water Pollution Control, July 1995.

The purpose of this agreement is to establish "a cooperative... program of effective water quality protection associated with silvicultural and agricultural production activities". The document includes procedures for investigating water quality-related complaints in forestry operations.

E. Tennessee Department of Environment and Conservation, Division of Water Pollution Control, General Permits, Aquatic Resource Alteration Permit Program

(ARAPP), August 1996.

This program requires that a permit be obtained before undertaking any activity which may impact state aquatic resources. Activities requiring a permit include road crossings of waters, stream bank stabilization, sand and gravel dredging, utility line crossings, minor wetland alterations, alteration of wet weather conveyances, and others.

F. Creation of drainage and levee districts and assessments (Drainage law acts of 1909, etc.)

Federal laws and programs

Applicable federal statutes and programs which may be applicable to municipal stormwater quantity and quality management include the following:

A. Clean Water Act of 1972 (construction, NPDES permit, stormwater runoff)

Section 402 (dredging, filling, wetlands)

Section 404 (construction, NPDES permit, stormwater runoff)

The Clean Water Act addresses the problem of point source pollution by requiring a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutants to navigable waters. The primary sources of point source pollution targeted by the act were discharges of industrial process wastewater and municipal sewage.

B. Water Quality Act of 1987

The Water Quality Act amends the Clean Water Act of 1972 to address the problem of nonpoint source pollution. It requires a permit for stormwater discharges associated with industrial activities and for discharges from storm drain systems in municipalities with populations greater than 100,000.

C. TVA Section 26a

Section 26a of the Tennessee Valley Authority Act of 1933, as amended, prohibits "….the construction, commencement of construction, operation, or maintenance…" in the Tennessee River or any of its tributaries of any structures "…. affecting navigation, flood control, or public lands or reservations…until plans for such construction, operation, and maintenance shall have been submitted to and approved by the (TVA) Board."

Plans for any (detention or retention) dams in the Tennessee River drainage basin of such size that their individual or cumulative failure would affect navigation, flood control, or public lands or reservations or interfere with interstate commerce are subject to review by the Tennessee Valley Authority under Section 26a.

D. National Flood Insurance Act of 1968

The National Flood Insurance Act requires communities to adopt measures to

control development in floodplain areas in order to be eligible for federal flood insurance. Zoning, building codes, subdivision regulations, and other ordinances adopted in order to comply with this act can be written to also address drainage issues.

Summary

The proper selection and implementation of BMPs can be a very effective means for protecting Tennessee's streams and lakes by reducing stormwater-generated pollution and avoiding costly flooding problems from post-construction development sites.

It is important, especially in a time of increasing insurance premiums and claims and lawsuits, that local governments need to be aware of its legal regulatory responsibilities in urban stormwater management for both water quality and quantity issues to protect themselves, as much as possible, against tort liability and to reduce the costs of such to the taxpayers, who ultimately must bear the cost for careless or negligent management of urban runoff.

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