



ENVIRONMENTAL
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State Wetland Protection

Status, Trends, & Model Approaches

*A 50-state study by the
Environmental Law Institute*

*With support from the
U.S. Environmental Protection Agency*

2008

Appendix: State Profiles

Tennessee

I. Overview

As of the early 1990s, Tennessee had lost more than half of its historic wetlands, with an estimated 787,000 acres remaining.^{1,2} Many wetlands have been lost due to filling, draining, water diversion,³ and habitat fragmentation,⁴ and alteration of hydrologic processes by agriculture, construction, mining, and creation of dams has significantly reduced wetland water quality. Excessive or inadequate water inputs, high sediment or nutrient loads, and interference with vegetation have often resulted in imbalance among the physical, chemical, and biological processes that together determine wetland function.⁵

However, the rate of wetland loss in Tennessee has significantly declined in recent years. A state interagency committee devoted to wetland management has identified the following general trends in the state:

- Agricultural conversions are decreasing;
- Marginal cropland is being abandoned and allowed to revert to wetlands;
- Bottomland hardwoods are being converted to cropland at a decreasing rate;
- Urban conversions are increasing; and
- Mitigation for increasing transportation impacts is helping to limit the net loss of wetland acreage.⁶

Tennessee's wetlands are regulated by the Department of Environment and Conservation (TDEC) Division of Water Pollution Control, which requires either §401 certification or a state permit for impacts to wetlands. The Tennessee Wildlife Resources Agency (TWRA) collaborates with TDEC on mitigation banking and independently administers a program to acquire and restore wetland properties.

II. Regulatory Programs

Wetlands definitions and delineation

The Tennessee Water Quality Control Act of 1977 defines "waters of the state" as:

¹ KENNETH L MORGAN & THOMAS H ROBERTS, TENN. TECHNOLOGICAL UNIV., AN ASSESSMENT OF WETLAND MITIGATION IN TENNESSEE (Tenn. Dep't of Env't and Conservation eds., 1999), *available at* <http://www.state.tn.us/environment/na/wetlands/mitdoc3.pdf>, *citing* T. E. DAHL, WETLAND LOSSES IN THE UNITED STATES, 1780'S TO 1980'S (U.S. Department of the Interior, Fish and Wildlife Service eds., 1990).

² GOVERNOR'S INTERAGENCY WETLANDS COMM., TENNESSEE'S WETLAND CONSERVATION STRATEGY (October 1998), *available at* <http://www.state.tn.us/environment/na/wetlands/>, *citing* T. E. DAHL, WETLAND LOSSES IN THE UNITED STATES, 1780'S TO 1980'S (U.S. Department of the Interior, Fish and Wildlife Service eds., 1990).

³ *Id.*

⁴ Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (March 13, 2007).

⁵ GOVERNOR'S INTERAGENCY WETLANDS COMM., *supra* note 2.

⁶ *Id.*

any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.⁷

Wetlands are defined in the TDEC rules as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”⁸

Tennessee relies on the delineation criteria in the Corps’ 1987 *Wetland Delineation Manual*.⁹

Wetland-related statutes and regulations

The Tennessee Water Quality Control Act of 1977¹⁰ and the corresponding Aquatic Resources Alteration Rule¹¹ establish the state’s Aquatic Resources Alteration Permit (ARAP) program that regulates wetlands and wetland activities apart from those covered by individual §404 permits. Physical alterations to waters of the state that require either an ARAP or a §401 water quality certification include: dredging, excavation, channel widening, or straightening; bank sloping; stabilization; channel relocation; water diversions or withdrawals; dams, weirs, dykes, levees or other similar structures; flooding, excavating, draining and/or filling a wetland; road and utility crossings; and structural fill.

§401 certification program

Tennessee uses §401 certification to protect wetlands by approving, conditioning, or denying federal §404 permits.¹² In 2000, rules for implementation of the state’s §401 certification and the ARAP programs were formally adopted. The rules specifically define wetlands as a category of waters of the state and establish a “no net loss of water resource value” standard for permitting.¹³ Section 401 certification is required for any §404 permit approved by the Corps. However, if the Corps issues a Nationwide Permit (NWP) for a project, or doesn’t have jurisdiction over the impacted wetland, then the applicant must obtain a state ARAP permit.¹⁴

TDEC issues approximately 400 to 500 wetland permits per year, split about equally between ARAPs and §401 certification. Almost all decisions are approved; few decisions are waived.¹⁵ Approval is almost always contingent upon changes to the original application, such as reductions of impacts or incorporation of avoidance and minimization considerations.¹⁶ Wetland permit decisions are based on both quantitative and qualitative assessment methodologies. These

⁷ TENN. CODE ANN. § 69-3-103(33).

⁸ TENN. COMP. R. & REGS. 1200-4-7-.03(38).

⁹ Personal Communication with Mike Lee, Tenn. Dep’t of Env’t and Conservation (January 9, 2007).

¹⁰ TENN. CODE ANN. § 69-3-108.

¹¹ TENN. COMP. R. & REGS. 1200-4-7.

¹² Lee, *supra* note 9.

¹³ TENN. COMP. R. & REGS. 1200-4-7-.01, 1200-4-7-.04.

¹⁴ Lee, *supra* note 9.

¹⁵ *Id.*

¹⁶ Personal Communication with Mike Lee, Tenn. Dep’t of Env’t and Conservation (March 12, 2007).

qualitative factors are described in TDEC's Aquatic Resource Alteration Rules in relation to assessing water resource values¹⁷ and in the Tennessee Antidegradation Standard.¹⁸

TDEC's wetland assessment methodology is still evolving. The division is incorporating Tennessee's antidegradation rules and tier evaluations into the permit assessment process.¹⁹ TDEC reviews all applications to assess the proposed impacts and determine if a tier assessment must be conducted. The antidegradation guidelines, which apply to all waters of the state, are more stringent for impacts to Tier 2 and 3 wetlands than those for Tier 1 wetlands.²⁰ A field review is conducted for projects impacting all three tiers of wetlands; these are coordinated with TWRA, the Corps, the U.S. Fish and Wildlife Service (FWS), and occasionally the U.S. Environmental Protection Agency (EPA).²¹ The department also has an EPA grant to develop a new assessment methodology for permitting purposes.²²

TWRA reviews public notices for §401 certification and ARAP permits to ensure that the proposed impacts and mitigation comply with the Basic Minimum Compensatory Mitigation Requirements developed by TDEC, TWRA, EPA, Corps, and FWS.²³ TWRA also ensures that permits follow the mitigation ratios laid out in the TDEC mitigation rules.²⁴

Organization of state agencies

Under the Water Quality Control Act, the TDEC Division of Water Pollution Control has regulatory authority for wetlands and administers the §401 certification and ARAP programs. While a number of staff members devote time to wetland-related issues, only one works full-time on wetlands. This full-time staff member works primarily on permitting, but also handles some enforcement issues and is responsible for EPA State Program Development Grants. Other staff members handle wetland-related permits, and some field office personnel spend portions of their time on wetland delineation and evaluation. Funding for wetland work comes from permit processing fees, the general state operating budget, and the EPA State Program Development Grants. TDEC has field offices in Nashville, Jackson, Cookeville, Johnson City, Memphis, Columbia, Chattanooga, and Knoxville.²⁵

TWRA comments on the TDEC permitting processes. Approximately 67 staff members spend part or all of their time on wetland-related activities (the equivalent of an estimated 21 FTEs), including habitat biologists and land managers in regional offices.²⁶ These regional biologists review TDEC permit public notices to write TWRA comments. Funding for these activities is provided by state appropriations, money paid to the agency for mitigation credits, and regional

¹⁷ TENN. COMP. R. & REGS. 1200-4-7-.04.

¹⁸ TENN. COMP. R. & REGS. 1200-4-3-.06.

¹⁹ Lee, *supra* note 9.

²⁰ As of early 2007, TDEC was planning to rename these categories. Tier 3 waters will be renamed as "Outstanding Natural Resources," Tier 2 waters as "Exceptional Tennessee Waters", and Tier 1 as "All Other Waters". Lee, *supra* note 16.

²¹ Lee, *supra* note 9.

²² *Id.*

²³ USACE ET AL.. SOME BASIC MINIMUM COMPENSATORY MITIGATION REQUIREMENTS (October 1999) (on file with author).

²⁴ Personal Communication with Rob Todd, Tenn. Wildlife Res. Agency (January 17, 2007).

²⁵ Lee, *supra* note 9.

²⁶ Personal Communication with Rob Todd, Tenn. Wildlife Res. Agency (March 2, 2007).

wetland budgets for wildlife management areas. TWRA also administers the Tennessee Wetland Acquisition Fund, which acquires and restores wetlands. This program is funded by a real estate transfer tax. TWRA is headquartered in Nashville and maintains regional offices in Jackson, Nashville, Morristown, and Crossville.²⁷

Nationwide permits

TDEC has issued conditional §401 water quality certification for 22 NWP's.²⁸ State certification was issued for seven NWP's in accordance with the provisions and general terms and conditions of the state's corresponding general permits.²⁹ Certification is denied for seven NWP's.^{30,31}

The Division of Water Pollution Control reviews NWP's when they come up for federal reauthorization to certify that the proposed changes satisfy state water quality standards. The development of regional conditions on NWP's is handled in a series of meetings preceding re-issuance involving the Division of Water Pollution Control, TWRA, FWS, EPA, and the Corps. Conditions generally address coordination in the permitting process between the Corps and TDEC, and tend to result in notification requirements.³²

Tennessee also has 15 General Aquatic Resource Alteration Permits that can be used to authorize a variety of minor impact activities in streams and wetlands.³³

Mitigation

The Tennessee Water Pollution Control Regulations require that permittees consider avoidance and minimization of impacts.³⁴ The Aquatic Resources Alteration Rule requires that impacts

²⁷ Todd, *supra* note 24.

²⁸ TNDEC has conditioned approval of NWP#3 - Maintenance; NWP#4 - Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities; NWP#7 - Outfall Structures and Maintenance; NWP#12 - Utility Line Activities; NWP#13 - Bank Stabilization; NWP#14 - Linear Transportation Projects; NWP#15 - U.S. Coast Guard Approved Bridges; NWP#16 - Return Water From Upland Contained Disposal Areas; NWP#17 - Hydropower Projects; NWP#20 - Oil Spill Cleanup; NWP#22 - Removal of Vessels; NWP#23 - Approved Categorical Exclusions; NWP#25 - Structural Discharges; NWP#27 - Stream and Wetland Restoration Activities; NWP#30 - Moist Soil Management for Wildlife; NWP#32 - Complete Enforcement Actions; NWP#33 - Temporary Construction, Access and Dewatering; NWP#34 - Cranberry Production Activities; NWP#36 - Boat Ramps; NWP#37 - Emergency Watershed Protection and Rehabilitation; NWP#38 - Cleanup of Hazardous and Toxic Waste; and NWP#42 - Recreational Facilities.

²⁹ NWP#5 - Scientific Measurement Devices; NWP#6 - Survey Activities; NWP#13 - Bank Stabilization; NWP#18 - Minor Discharges; NWP#19 - Minor Dredging; NWP#21 - Surface Coal Mining Activities; and NWP#36 - Boat Ramps.

³⁰ NWP#29 - Single-family Housing; NWP#31 - Maintenance of Existing Flood Control Facilities; NWP#39 - Residential, Commercial, and Institutional Developments; NWP#40 - Agricultural Activities; NWP#41 - Reshaping Existing Drainage Ditches; NWP#43 - Stormwater Management Facilities; and NWP#44 - Mining Activities.

³¹ TENN. DEP'T OF ENV'T AND CONSERVATION, REGIONAL CONDITIONS FOR NATIONWIDE PERMITS IN TENNESSEE. (May 2002), available at <http://www.mvm.usace.army.mil/regulatory/Permit/NWP.TN.Reg.Cond.2002.pdf>.

³² Personal Communication with Robert Baker, Tenn. Dep't of Env't and Conservation (January 19, 2007).

³³ Alteration of wet weather conveyances; Bank stabilization; Construction and removal of minor road crossings; Construction of launching ramps and public access structures; Construction of intake and outfall structures; Emergency road repair; Maintenance activities; Minor alterations to wetlands; Minor dredging and filling; Sand and gravel dredging; Sediment removal for stream remediation; Stream restoration and habitat enhancement; Surveying and geotechnical exploration; Utility line crossings; Wetlands restoration and enhancement. TENN. DEP'T OF ENV'T AND CONSERVATION, ENVIRONMENTAL PERMITS HANDBOOK available at <http://www.state.tn.us/environment/permits/arap.shtml> (last visited June 27, 2007).

resulting in lost resource value of waters of the state must be “offset by mitigation sufficient to result in no overall net loss of resource value.” Under this regulation, a §401 certification or ARAP permit may not be issued unless proposed projects are designed to avoid impacts, minimize them, or provide mitigation.³⁵

TDEC rules guide compensatory mitigation in Tennessee. Under these rules, applicants must consider alternatives to the proposed activity that would result in a net loss of water resource value in waters of the state. If the activity will result in a loss of resource values, then the applicant must propose mitigation sufficient to achieve “no net loss” of water resource values. The rules include suggested ratios for common mitigation measures.³⁶ Certain minor impacts to wetlands authorized under the state’s General Aquatic Resource Alteration Permits are exempt from mitigation requirements if they do not exceed prescribed limits.³⁷

The Division of Water Pollution Control also has stream mitigation guidelines³⁸ that are used by the Tennessee Stream Mitigation Program of the non-profit Tennessee Wildlife Resources Foundation. These guidelines cover riparian wetlands in addition to streams and are followed by TDEC permit writers.³⁹ The stream mitigation program is an in-lieu-fee program through which permittees pay \$200 per permitted foot of stream loss.⁴⁰

A Mitigation Banking Review Team (MBRT) was established in 1995. The members include the Memphis and Nashville Corps Districts, TDEC, TWRA, EPA, FWS, U.S. Department of Agriculture (USDA), Federal Highway Administration, and Tennessee Department of Transportation. The team adopted a general wetland banking memorandum of agreement (MOA), which serves as the guiding document for banking.^{41,42}

As of January 2007, there were seven wetland mitigation banks operating in the state. Two are operated by state agencies, two by private not-for-profit organizations, and three by private, for-profit organizations. Banks are established through an MOA signed by state and federal agencies.⁴³

Compliance and enforcement

TDEC has an Enforcement Section that handles wetland issues, but the responsibility to follow-up with enforcement orders lies with the Division of Water Pollution Control’s permit writers.⁴⁴

³⁴ TENN. CODE ANN. § 69-3-102(b).

³⁵ TENN. COMP. R. & REGS. 1200-4-7-.04 (c).

³⁶ TENN. COMP. R. & REGS. 1200-4-7-.04.

³⁷ Lee, *supra* note 16.

³⁸ TENN. DEP’T OF ENV’T AND CONSERVATION, STREAM MITIGATION GUIDELINES FOR THE STATE OF TENNESSEE (June 1, 2004) (on file with author).

³⁹ Lee, *supra* note 9.

⁴⁰ Tennessee Wildlife Resources Agency, The Tennessee Wildlife Resources Foundation is a Reality, *at* <http://www.tennessee.gov/twra/twrafoun.html> (last visited June 27, 2007).

⁴¹ FED. HIGHWAY ADMIN.; DEP’T OF THE ARMY ET AL., GENERAL WETLAND BANKING MEMORANDUM OF AGREEMENT (June 12, 1995) (on file with author).

⁴² Lee, *supra* note 9.

⁴³ *Id.*

⁴⁴ *Id.*

In 2006 the program issued approximately six abatement/corrective action orders.⁴⁵ It issued one injunction, which was concluded.⁴⁶ The program pursued criminal cases for the first time in recent history, one of which resulted in the serving of a warrant.⁴⁷ Criminal penalties can vary up to \$10,000 per day for violations of the Tennessee Water Quality Control Act of 1977. The Act also provides for criminal penalties of up to \$25,000 for knowing violations.⁴⁸ The state assesses civil penalties for violations of the Water Quality Act for activities in wetlands (unpermitted fill, drainage, violation of §401 permit conditions, etc.), but did not impose any in 2006. Civil penalties can be imposed in amounts of up to \$10,000 per day.⁴⁹ Typically, though, these penalties range between \$3,500 and \$15,000 per offender.⁵⁰

Enforcement cases are generally resolved with restoration to pre-existing conditions and payment of civil penalties. The majority of penalties are contingent upon the successful completion of corrective actions required by TDEC.⁵¹

Tracking systems

The Division of Water Pollution Control uses a web-based database called *WPCdatabase* to track the status of permit applications. The web-based feature allows access to and use of the database by all statewide division offices. *WPCdatabase* includes information such as a brief description of the proposed activity, affected water body, latitude and longitude, whether endangered species are present in the impacted area, the number of acres of wetlands or streams to be impacted, and the number of acres to be mitigated. The database also includes information from other permits that may be associated with a site.⁵²

The division also has a database for tracking mitigation, although it has not been maintained. As of early 2007, the division had recently assigned a staff member to update the database and move forward with compliance proceedings that may be discovered in the process. The database tracks whether mitigation has been completed, if the project is in compliance with agency rules, and if the site is being monitored as required. This data is drawn from issued permit files that include information on required mitigation and the current status of projects.⁵³

III. Water Quality Standards

Tennessee does not have water quality standards specific to wetlands. Wetlands are covered by the water quality standards and designated uses for all surface waters of the state.⁵⁴ Tennessee's water quality standards and associated designated uses are designed to protect the "resource values," or functions, of waters of the state. Resource values include the ability of water

⁴⁵ TENN. CODE ANN. § 69-3-109 (2006); TENN. COMP. R. & REGS. 1200-4-1-.03.

⁴⁶ TENN. COMP. R. & REGS. 1200-4-1-.03.

⁴⁷ Lee, *supra* note 9.

⁴⁸ TENN. CODE ANN. § 69-3-115.

⁴⁹ *Id.*

⁵⁰ Lee, *supra* note 9.

⁵¹ *Id.*

⁵² Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (January 24, 2007).

⁵³ Lee, *supra* note 9.

⁵⁴ TENN. CODE ANN. § 69-3-105.

resources to: filter, settle, and/or eliminate pollutants; prevent the entry of pollutants into downstream waters; assist in flood prevention; provide habitat for fish, aquatic life, livestock and water fowl; provide drinking water for wildlife and water fowl; provide and support recreational uses; and provide both safe and adequate quality and quantity of drinking water.⁵⁵

Tennessee also has anti-degradation standards that apply to all waters of the state, and that are used in the §401 and ARAP permitting processes (*see Section II, Regulatory Programs, 401 certification program*).^{56,57}

Source permit decisions for wetlands (NPDES) are based on the resource values of wetlands. If an activity is proposed that results in loss of resource values, then applicant must avoid, minimize, and/or compensate for these losses.⁵⁸

IV. Monitoring and Assessment

Monitoring and assessment for wetlands

TDEC has developed a functional assessment methodology (the Tennessee Rapid Assessment Methodology (TRAM)) to assess the quality of wetlands. This methodology is based on the Ohio Rapid Assessment Methodology and is still being modified to account for differences between Ohio and Tennessee. TDEC also has developed two hydrogeomorphic (HGM) models and is in the process of developing a third in coordination with TWRA, FWS, Corps, EPA, and USDA. TDEC hopes to eventually combine the use of the TRAM, a primarily qualitative assessment, with the more quantitative HGM assessments.⁵⁹ These methodologies allow TDEC to assign wetlands a tier category for antidegradation regulatory purposes. The assessments also justify permit decisions in the §401 or ARAP application processes.⁶⁰

TDEC is considering using an assessment methodology to determine wetland mitigation requirements. The agency is proposing a seminar under its current EPA Program Development Grant for all applicable agencies to discuss feasibility.⁶¹

Monitoring and assessment for streams

Tennessee also uses assessment methodologies for streams to help meet antidegradation standards, determine Total Daily Maximum Loads (TMDLs), make permitting decisions, and update the §303(d) list.⁶² TDEC uses a bioassessment methodology, a rapid assessment methodology, and standard operating procedures. The standard operating procedures use a macroinvertebrate assessment or other defensible method.^{63, 64} These were developed in conjunction with EPA.⁶⁵

⁵⁵ TENN. COMP. R. & REGS. 1200-4-7-.03.

⁵⁶ Lee, *supra* note 9.

⁵⁷ TENN. COMP. R. & REGS. 1200-4-3-.06.

⁵⁸ Lee, *supra* note 9.

⁵⁹ Lee, *supra* note 16.

⁶⁰ Lee, *supra* note 9.

⁶¹ *Id.*

⁶² Lee, *supra* note 52.

⁶³ TENN. COMP. R. & REGS. 1200-4-3-.03.

V. Restoration

The Tennessee Wetlands Conservation Strategy established a goal of restoring 70,000 acres of wetlands by the year 2000.⁶⁶ However, the strategy is not being implemented because TDEC lacks sufficient personnel.⁶⁷

The state's wetland restoration program, TWRA's Wetland Acquisition Fund, uses money from a real estate transfer tax to acquire and manage wetland properties. Since the fund's inception in 1986, it has acquired 65,391 acres of wetlands and buffer zones. The state legislature periodically allows the agency to use the fund to purchase upland areas in regions that have few wetlands. The fund has purchased 59,400 acres of upland and surface rights for 75,000 additional acres. TWRA reforests much of the land that has been converted for agriculture and conducts enhancement in wetland areas for waterfowl and shorebirds. This includes the creation of refuges and planting and managing vegetation. These areas are managed by staff members, who also monitor bird use and vegetation success.⁶⁸

The Land Reclamation Section of the TDEC Water Pollution Control Division creates wetlands as part of its acid mine runoff treatment systems. The section builds created wetlands as the last stage in a series of acid drainage treatments. Funds are usually provided by state appropriations, the U.S. Office of Surface Mining, and matching money from agencies such as EPA and TWRA. The section monitors the success of these created wetlands with water quality sampling.⁶⁹

VI. Public-Private Partnerships

While TDEC does not have a formal program to coordinate with landowners, department staff occasionally coordinate with landowners on mitigation needs. Staff members keep the contact information for interested landowners so that they can connect them with permit applicants who need to fulfill mitigation requirements.⁷⁰ TWRA coordinates with conservation groups such as the Wolf River Conservancy and The Nature Conservancy to acquire and restore wetlands through the Tennessee Wetland Acquisition Fund and NAWCA grants.⁷¹

VII. Education and Outreach

The state does not conduct outreach or education specific to wetlands.

⁶⁴ Lee, *supra* note 9.

⁶⁵ Lee, *supra* note 52.

⁶⁶ GOVERNOR'S INTERAGENCY WETLANDS COMM., TENNESSEE'S WETLAND CONSERVATION STRATEGY (October 1998), available at <http://www.state.tn.us/environment/na/wetlands/>.

⁶⁷ Lee, Tennessee *supra* note 9.

⁶⁸ Personal Communication with John Gregory, Tenn. Wildlife Res. Agency (January 22, 2007).

⁶⁹ Personal Communication with Tim Eagle, Tenn. Dep't of Env't and Conservation (January 19, 2007).

⁷⁰ Lee, *supra* note 9.

⁷¹ Gregory, *supra* note 68.

VIII. Coordination with State and Federal Agencies

Although Tennessee has developed a Wetlands Conservation Strategy, the plan has not been implemented due to lack of funds and staff. However, TDEC and TWRA work with the Memphis and Nashville Corps Districts, EPA, FWS, USDA, the Federal Highway Administration, and the Tennessee Department of Transportation on the state's MBRT. TDEC and TWRA also participate in regular monthly meetings on regulatory issues with the Corps and FWS. These meetings primarily focus on permit applications, but also cover mitigation and banking.⁷²

IX. Acronyms and Abbreviations

Corps – U.S. Army Corps of Engineers
CWA – Clean Water Act
EPA – U.S. Environmental Protection Agency
FSA – USDA Farm Service Agency
FTE – Full-time Equivalent
FWS – U.S. Fish and Wildlife Service
HGM – Hydrogeomorphic
MBRT – Mitigation Banking Review Team
MOU/MOA – Memorandum of Understanding/Memorandum of Agreement
NAWCA – North American Wetland Conservation Act
NAWMA – North American Waterfowl Management Act
NEPA – National Environmental Protection Act
NPDES – National Pollution Discharge Elimination System
NRCS – USDA Natural Resources Conservation Service
NWPs – Nationwide Permits
TDEC – Tennessee Department of Environment and Conservation
TMDLs – Total Daily Maximum Loads
TWRA – Tennessee Wildlife Resources Agency
USDA – United States Department of Agriculture
WQS – Water Quality Standards

⁷² Lee, *supra* note 9.