



2018

**Tennessee’s Roadmap to Securing the Future of
Our Water Resources**
Legal & Institutional Framework Working Group
Executive Summary

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Tennessee has a wide variety of statutes, rules, regulations, and case law that relate to its many surface water and groundwater resources. However, Tennessee does not have in place a long-term, comprehensive water use and supply plan directing the efficient and uniform use of these tools. Despite forecasts that project Tennessee’s population to nearly double between 2017 and 2064, as well as the existence of a “comprehensive growth plan” statutory requirement, state government has not realized a long-term water policy for decades. In an effort to galvanize a response to this mounting necessity, the following paper catalogues the ways in which Tennessee currently employs—shortcomings included—its many water-related legal tools in the context of water use and supply. For further reading, please see the Institutional and Legal Framework Working Group’s complete report titled “Tennessee’s Water Plan: Legal and Institutional Framework” and located on this website.

I. COMMON LAW

The regulation of water supply in the United States has traditionally been based on common law doctrines developed by state courts when deciding real property ownership disputes. Generally, dry western states adopted systems of “prior appropriation” (characterized by the phrase: “first in time, first in right”) due to scarce water resources, while wetter eastern states—Tennessee included—adopted “riparian rights” systems. Briefly, riparianism entails water-use rights held in association with ownership of land that touches a body of surface water or groundwater; each riparian owner is entitled to reasonable use of said water, provided the use does not interfere with the same rights enjoyed by co-riparian owners.

Importantly, common law relies on after-the-fact litigation rather than proactive, preventative measures when it comes to solving disputes. Over time, states have realized that the regional uncertainties inherent to population growth and water-related disasters (*e.g.*, droughts and floods) can overrun the narrowly-drawn, reactive principles of common law. Thus, to better facilitate resource sustainability and environmental protection, eastern states have gradually supplemented their common law with statutes, rules, and programs, giving rise to “regulated riparianism.”

II. REGULATED RIPARIANISM

The Tennessee Department of Environment and Conservation (TDEC) consists of multiple program areas for the protection of Tennessee’s air, land, and water through applicable regulatory frameworks. With respect to water use and supply, TDEC’s Division of Water Resources (DWR) handles the day-to-day responsibilities of administering water programs for the following statutory schemes: (1) Tennessee Water Quality Control Act of 1977 (WQCA); (2) Tennessee Water Resources Information Act (WRIA); (3) Inter-Basin Transfer Act; (4) Tennessee Safe Drinking Water Act; and (5) other source water protection statutes. The Board of Water Quality, Oil and Gas is the administrative tribunal for hearings in enforcement and permit appeals, and it is also responsible for promulgating water rules and regulations.

A. *Water Quality Control Act*

The WQCA declares the waters of Tennessee are held in public trust for all Tennesseans, and that state government “has an obligation to take all prudent steps to secure, protect, and preserve this right [to unpolluted waters].” Tenn. Code Ann. § 69-3-102(a). The WQCA prohibits

the alteration of physical, chemical, and biological properties of any water of the State without a permit. TDEC issues permits for activities other than discharges from wastewater conveyances through the ARAP program. These include water withdrawals, which allow ARAPs to play a role in “plan[ning] for the future use of waters so that the water resources of Tennessee might be used and enjoyed to the fullest extent[.]” Tenn. Comp. R. & Regs. 0400-40-07-.01(1). ARAPs can apply broadly when a proposed water withdrawal may affect the quality of a source stream by removing a significant portion of its flow. However, ARAPs are not applicable to all withdrawals: for example, agriculture and forestry activities are largely exempt from ARAP requirements.

B. Water Resources Information Act

To enable more accurate monitoring of water withdrawal, the General Assembly passed the WRIA—a water registration system designed to facilitate more accurate forecasts of water use and demand. Under the WRIA, “no person shall withdraw ten thousand (10,000) or more gallons of water per day from a surface water or a groundwater source unless the withdrawal is currently registered with the commissioner.” Tenn. Code Ann. § 69-7-304(a). However, “[a] person may withdraw water for agricultural purposes without having registered the withdrawal.” Tenn. Code Ann. § 69-7-304(d). From a data-gathering standpoint, these permitting exceptions limit the State’s ability to accurately frame its water portfolio and are ripe for reconsideration.

C. Inter-Basin Water Transfer Act

In response to growing concerns about increased population and drought, as well as certain nearby interstate water compacts, Tennessee passed the Inter-Basin Water Transfer Act

(IBWTA) in 2000, establishing ten water basins. Tenn. Code Ann. § 69-7-201 *et seq.* The IBWTA serves to facilitate “regulation on the basis of the quantity of water in river basins[,]” and acts as “an explicit mechanism . . . to regulate proposals for the diversion of water from one river basin to another.” Tenn. Code Ann. § 69-7-202. Specifically, an inter-basin transfer occurs when water is withdrawn from any of Tennessee’s ten watersheds and transferred directly or through intermediaries to a point outside that watershed. TDEC makes IBTWA permit decisions based on a host of factors, including stream flow of the losing river(s), reasonable foreseeable water needs, conservation, and whether an applicant’s proposed use is reasonable and beneficial.

D. Safe Drinking Water Act

Tennessee’s Safe Drinking Water Act (SDWA) governs the construction and operation of public water supply systems, including community water systems and non-community water systems (*e.g.*, hotels, restaurants, and industries that rely on their own surface or groundwater source). The SDWA reiterates the WQCA’s public trust doctrine, stating that “the people of the state . . . have a right to both an adequate quantity and quality of drinking water.” Tenn. Code Ann. § 68-221-702.

E. Source Water Protection

Drinking water source protection regulations “establish a statewide program for development and implementation of wellhead protection plans by public water systems.” Tenn. Comp. R. & Regs. 0400-45-01-.34(1)(a). These regulations “protect aquifers and surface water bodies used as potable water supply sources by public water systems from contamination[.]” *Id.*

Relatedly, the Tennessee Water Well Act requires all persons drilling a water well to first obtain a license from TDEC. TDEC's Well Driller Supervision Program oversees this licensing process, and combines with Tennessee's Underground Injection Control (UIC) program to ensure groundwater quantity and quality.

III. NATURAL RESOURCE PROTECTION

Within the above-listed acts and programs exist mechanisms to protect Tennessee's natural resources from a key shortcoming of common law, often referred to—fittingly, perhaps—as the “Tragedy of the Commons.” This social phenomenon illustrates the problem with an unregulated, shared-resource system: independent users, motivated by self-interest, often unwittingly combine in consumption to deplete the very resource that sustained their individual needs. To prevent this, Tennessee's General Assembly added an amendment to Tennessee's Constitution in 1870, specifically authorizing “laws for the protection and preservation” of game and fish. Tenn. Const. art. XI, § 13. Over the next century, Tennessee enacted protections for both wildlife and natural resources, going so far as to declare that all wild game and fish “belong[] to the people in their collective capacity.”¹

Today, Tennessee's natural resource laws reflect the inter-relatedness of water, species, and habitat throughout the hydrologic cycle. Tennessee's rare and endangered natural resources are primarily protected pursuant to the Rare Plant Protection and Conservation Act of 1985 and the Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974, as well as the federal Endangered Species Act. As referenced above,

¹ Marge Davis, Sportsmen United: The story of the Tennessee Conservation League, 14 (1997).

the WQCA makes unlawful an activity that will “result or will likely result in harm, potential harm or detriment to . . . fish, or aquatic life[.]” Tenn. Code. Ann. §69-3-115(a) and (c). Tennessee was also one of the first states to establish a “scenic rivers” program, designed to protect not only the aesthetic qualities of free-flowing rivers, but also the “recreational, geological, fish and wildlife, botanical, historical, archaeological and other scientific and cultural values of great present and future benefit to the people.” Tenn. Code Ann. § 11-13-101(b). These laws are primarily implemented, overseen, and enforced by TDEC, the Tennessee Wildlife Resources Agency (TWRA), and the Tennessee Fish and Wildlife Commission.

IV. TENNESSEE WATER UTILITY SYSTEMS

Tennessee relies on a variety of water utilities to supply end-user customers with water for personal, agricultural, industrial, and civil service purposes. The vast majority of water service in Tennessee is provided by public water systems owned and operated by governmental entities, including cities, counties, and utility districts. There also exist private entities—including investor-owned utilities, water cooperatives, and homeowners associations—to round out Tennessee’s water portfolio.

A. *Municipal Water Systems*

Tennessee municipalities have the power to operate water systems pursuant to a variety of private acts (*e.g.*, the municipal charter) and general laws. Due to this variety of enabling authorities, the operations and powers of municipal water systems vary:

1. **Municipal water departments** function like other municipal departments—members of a municipality’s legislative body (*i.e.*, elected officials) form a governing board to establish rates, adopt water service regulations, and approve contracts for the system’s operation and maintenance.
2. **Municipal utility boards**, while independent, are not separate government entities—though they are granted the power to control the construction, operation, and maintenance of municipal water systems, debt issued to finance the municipal water system is issued in the name of the municipality.
3. **Municipal utility authorities** are created via private act and have full discretion to control the construction, operation, and maintenance of the municipal water system. The governing boards of municipal utility authorities are appointed as set forth in each authority’s private act.

B. County Water Systems

Counties have the power to own and operate public water systems through an existing county agency, by creating a county public works department, or by creating a county board of public utilities. County boards of public utilities—which account for the majority of county-created water systems in Tennessee—operate similarly to municipal utility boards: members are appointed by the county mayor and are confirmed by the county legislative body. While authorized to establish customer rates and regulations for water service, they are not separate governmental entities. Debt issued to finance the county water system must be issued by the county.

C. Utility Districts

Utility districts are independent, governmental entities created for the purpose of providing water, sewer and other authorized utility services to end-user customers. Water utility districts are created by and operate their water systems pursuant to the Utility District Law of 1937. Tenn. Code Ann. §§ 7-82-101 to -804. The power to operate a utility district is vested in the utility district's board of commissioners. These commissioners are appointed by the county mayor. Utility districts have no taxing power; they operate solely from rate and fee revenues.

D. Investor-Owned Water Utilities

Investor-owned water utilities are regulated by the Tennessee Public Utilities Commission (TPUC). An investor-owned water utility must obtain a certificate of convenience and necessity from TPUC before providing water service to customers or expanding its service area. Investor-owned water utilities must obtain a franchise from the municipality in which it seeks to operate; however, any franchise agreement between a municipality and investor-owned water utility must be approved by TPUC.

E. Water Cooperatives and Homeowner Associations

Water cooperatives are non-profit corporations, typically small in scope, which do not have an exclusive geographic service area. Generally, these water systems are constructed when no other water utility is willing or able to serve a development. Historically, water

cooperatives have been regulated by TDEC, though they set their own rates for service and establish their own regulations for providing water service to customer-members.

V. RATEMAKING

Regulated utilities are authorized to recover their cost of business through set prices (“rates”), which are charged to consumers for their receipt of water services rendered. Naturally, these rates play an important role in regulating water supply—a low rate, for example, can incentivize wasteful consumer behavior, whereas high rates might restrict vulnerable end-users from critical water resources. Predictably, the wide array of water utility systems in Tennessee undergo and implement the ratemaking process in different ways via diverse authorities.

A. *Municipal and County Water Systems*

Municipal and county water systems must be self-sufficient entities—their revenues cannot be used to fund any other municipal purpose. The rates for water service provided by municipal and county water systems are established by the governing board and must “reflect the actual cost of providing the services rendered.” Tenn. Code Ann. § 7-34-115(a). In 1987, the legislature created the Water and Wastewater Financing Board (WWFB) to ensure reasonable rate increases and system efficiencies across water and wastewater systems. A public water system becomes subject to the jurisdiction of the WWFB when its annual audit shows the water system is “financially distressed.” Tenn. Code Ann. § 68-221-1010(a)(1). If a public water system fails to implement a rate structure to improve its financially distressed position, the

WWFB has the power to enter an order mandating the rates it deems are necessary to make the public water system financially self-sufficient.

B. Utility Districts

Pursuant to Tennessee law, a utility district's board of commissioners must establish reasonable rates for water services such that the utility district remains self-sufficient. Tenn. Code Ann. § 7-82-403. No state agency sets or reviews these rates, barring a rarely triggered review by the Utility Management Review Board (UMRB). The UMRB serves utility districts in a function similar to the WWFB's service of municipal and county systems: when a utility district's annual audit shows that the utility district is financially distressed, the UMRB has the power to mandate rates necessary to ensure the utility district operates self-sufficiently.

C. Investor-Owned Water Utilities

TPUC regulates the rates charged by investor-owned water utilities in Tennessee. TPUC conducts a contested case hearing on proposed rate increases, then enters an order granting, modifying, or denying the rate. TPUC must ensure that investor-owned water utilities charge "just and reasonable rates" which "takes into consideration the interests of both the consumer and the utility." *Tennessee Cable Television Ass'n v. Tennessee Pub. Serv. Comm'n*, 844 S.W.2d 151, 159 (Tenn. Ct. App. 1992).

D. Water Cooperative and Associations

Water rates are set by the governing boards of water cooperatives, which are then not subject to oversight by the WWFB, UMRB, TPUC, or any government agency.

VI. WATER SYSTEM SERVICE AREAS

Most water utilities in Tennessee have some degree of exclusivity or priority in providing service within their respective areas:

1. Municipal water systems have the exclusive right to provide service within the municipality's limits;
2. Water utility districts have the exclusive right to provide water service within their boundaries;
3. An investor-owned water utility has the exclusive right to provide service within the geographic boundaries set forth in its certificate of convenience and necessity, as issued by TPUC; and
4. While county water systems do not have an exclusive service area under Tennessee law, those created by private act are granted an exclusive right to provide water service within a defined service territory, which the county itself has the authority to designate.

Federal law provides many rural water utilities with service area protection which preempts Tennessee law. Beginning in 1961, Congress authorized the United States Department of Agriculture (USDA) to make loans and grants to rural water utilities for the construction of water line extensions and improvements to expand drinking water systems into

under-serviced areas. Most water utility districts in Tennessee have an outstanding loan from USDA. Rural county water systems, small municipal systems, and water cooperatives are also eligible for funding from USDA for rural water system improvements. This source of funding has a substantial impact on state water supply.

VII. MERGER, CONSOLIDATION, AND SALES OF WATER SYSTEMS

The merger, consolidation, or sale of water systems in Tennessee is rare, though provided for under a variety of authorities:

1. A municipality or county may sell or transfer its public water system to another water utility by agreement. No state agency must approve the sale, although TPUC must approve the acquisition of any water utility system by an investor-owned water utility.
2. For the purpose of water service efficiency, a utility district may petition a county mayor to approve the merger of multiple utility districts, or the consolidation of a utility district with a municipality or county.
3. An investor-owned water utility may sell its water system to a municipality, county, utility district, or water cooperative by agreement without obtaining the approval of TPUC, unless it seeks to merge with another investor-owned water utility.
4. Water cooperatives and associations may sell their water systems by agreement; however, TPUC must approve the acquisition of any water utility system by an investor-owned water utility.

5. Some water utilities have consolidated or financed the construction of joint water supply and water treatment plant facilities pursuant to private acts enacted by the General Assembly.

Under the Interlocal Cooperation Act, Tenn. Code Ann. §§ 12-9-101 *et seq.*, local governments may jointly exercise their powers with any other public agency. Municipalities and counties may use the Interlocal Cooperation Act to jointly operate and finance new water facilities. In addition, most water systems have agreements with neighboring systems for permanent, intermittent, or emergency water supply. Further, the UMRB “may consider the consolidation of the utility district with another utility district or districts, municipal utility system or county utility system to restore financial stability and to ensure continued operations for the benefit of the public being served by the utility district.” Tenn. Code Ann. § 7-82-704(a). However, there is no statutory authority to mandate the consolidation of water utilities, even those financially distressed. Instead, TDEC and the Board of Water Quality, Oil and Gas are directed to “encourage and support regional water planning whenever possible.” Tenn. Code Ann. § 69-7-308.

VIII. FEDERAL AUTHORITY AND WATER SUPPLY

Federal water supply policy recognizes a significant federal interest in the long-term management of water supplies but considers municipal and industrial (M&I) water supply development and management to be the primary responsibility of states and local entities. In Tennessee, two federal agencies, the USACE and the TVA, play a supporting role in managing water supply.

A. *U.S. Army Corps of Engineers*

The USACE² participates in developing water supplies through the construction, operation, and modification of federal multi-purpose projects. USACE projects in the Cumberland River system consist of lock and dam projects on the main stem and reservoir projects on tributaries and headwaters. More specifically, USACE-provided water supply services generally mean providing reservoir space for storing water and providing facilities in the project structure for withdrawing the stored water for water supply purposes. Most purposes served by USACE reservoir projects fall into eight general categories: flood control, navigation, hydroelectric power, irrigation, M&I water supply, water quality, fish and wildlife, and recreation. The specific purposes for which USACE projects on the Cumberland River were commonly authorized include flood control, navigation, and hydropower. Several federal regulations are particularly applicable to USACE's role in water supply management, including the Water Supply Act of 1958, the Water Resources Development Act of 1986, and Section 6 of the Flood Control Act of 1944.

B. *Tennessee Valley Authority*

The TVA is a multi-purpose federal corporation responsible for managing a range of programs for the use, conservation, and development of water resources related to the Tennessee River system. The TVA Act³ authorizes the agency to construct and operate dams and reservoirs in the Tennessee River and its tributaries to control destructive floods and to promote navigation. In carrying out this mission, TVA operates a system of dams and reservoirs

² The USACE is a direct reporting unit under the command of the Department of the Army.

³ The authority for these activities is found both in the preamble to the TVA Act and in Section 22, which gives TVA broad responsibility for developing the natural resource systems of the Tennessee River and provide for the general welfare of area citizens. 16 U.S.C. § 831u.

with associated facilities to manage the water resources of the Tennessee River for myriad purposes including navigation, flood control, power production, recreational opportunities and other public benefits. Section 26a of the TVA Act is a key tool in TVA's management of the Tennessee River system. It provides for TVA's review and approval of construction, operation, and maintenance for any planned structures or activities affecting navigation, flood control, or public lands or reservations of the Tennessee River or any of its tributaries. 16 U.S.C. § 831y-1. Activities which may require TVA approval via a 26a permit include but are not limited to obstructions, water withdrawals, extractions of water for agricultural and irrigation purposes, or temporary, emergency municipal water intakes.

C. Other Federal Authorities Relevant to Water Supply

A number of additional federal environmental statutes, regulations, executive orders, and guidelines are relevant to water projects. The Water Resources Planning Act (WRPA), the National Environmental Policy Act of 1969 (NEPA), and the Water Resources Development Act of 2007/Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies (PR&G) generally drive the need for coordinated and consistent planning as it relates to the conservation, development, and utilization of water resources. In particular, the PR&G establish that the federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other federal planning requirements.

Federal agencies such as TVA and USACE must conduct activities in compliance with all applicable federal environmental statutes, regulations and executive orders. The associated processes and requirements are integrated within federal agency planning processes.⁴

IX. *POTENTIAL INTERSTATE ISSUES AND OPPORTUNITIES*

Tennessee and other southeastern states have experienced rapid population growth, new economic development, increases in competing water uses, and growing demands for water resources. Combined with periods of drought, these factors all give rise to conflicts and concern among water users within Tennessee and beyond its borders. Water often flows through multiple political jurisdictions and does not adhere to man-made boundaries. Historically, interstate water conflicts primarily occurred in the western United States. However, water conflicts are becoming increasingly frequent in the eastern United States and are now occurring in and around Tennessee.

A. *Formal Dispute Resolution*

The Constitution has assigned roles to the United States Supreme Court and to Congress to resolve disputes between states about how to allocate interstate water resources. There are traditionally three ways that interstate waters can be divided between the states that use and rely upon them:

1. States can seek an allocation from Congress.⁵

⁴ Both the USACE and TVA are also subject to a host of federal environmental authorities, which include, but are not limited to, the Clean Air Act of 1963, 42 U.S.C. §§ 4701, *et seq.*; the Federal Water Pollution Control Act Amendments of 1972 (known as the Clean Water Act), 33 U.S.C. §§ 1251, *et seq.*; the Endangered Species Act of 1973, 16 U.S.C. §§ 1531, *et seq.*; the Fish and Wildlife Coordination Act of 1958, 16 U.S.C. §§ 661, *et seq.*; and the National Historic Preservation Act of 1966, 54 U.S.C. §§ 300101, *et seq.*

2. States can enter into a compact, which Congress then approves.⁶
3. States can ask to invoke the Supreme Court’s “original jurisdiction,” U.S. Const. Art. I, §
 2. Then, applying the federal common law of equitable apportionment, the Court allocates the right to use an interstate water source among the competing states.⁷

B. *Informal Dispute Resolution*

There may be opportunities for states to engage in voluntary, collaborative activities to manage water resources outside of a formal compact development process. The legal mechanisms for and binding nature of such informal discussions are open questions at this point. Such an arrangement would require initiative among numerous stakeholders with a common interest in securing a multi-state water future, and would likely involve some sort of documentation that establishes roles and responsibilities for various parties. Because federal agencies also play a role in water management, supply, and allocation, those agencies like the USACE or TVA may in a position to facilitate discussions and mediate disputes between states.

⁵ This has only happened once. See *Arizona v. California*.

⁶ U.S. Const. Art. I, Section 10, Clause 3 (“No State shall, without the consent of Congress . . . enter into any Agreement or Compact with another State.”). Tennessee is not a party to any interstate water compacts. However, some cooperation between Kentucky and Tennessee does exist, as does some cooperation between Tennessee and Virginia.

⁷ Interstate water disputes have repeatedly resulted in one or more states invoking the Supreme Court’s original jurisdiction. See *Virginia v. Maryland*, 54 U.S. 56, 74 n.9 (2003) (“Federal common law governs interstate bodies of water, ensuring that the water is equitably apportioned between the States . . .”). In fact, original jurisdiction water dispute cases are increasingly before the court. In January 2018, the Supreme Court heard argument in two such cases: *Florida v. Georgia*, discussed *infra*, and *Texas v. New Mexico and Colorado*. The latter is among a growing sub-genre: interstate groundwater disputes. In *Texas v. New Mexico*, as was true in *Kansas v. Nebraska*, the conflict arose in part because groundwater pumping had allegedly depleted water supplies allocated to downstream states under their respective compacts. Therefore, although the cases were not expressly related to allocation of aquifers among states, the discussion in the cases did not single-out or treat aquifers differently than surface water.

A number of current happenings highlight the need for Tennessee to take proactive steps to work collaboratively with all stakeholders to address current and impending interstate water resource concerns. These include but are not limited to arguments made by Mississippi in current litigation with Tennessee, Memphis, and others regarding water resources; claims made by Georgia with regard to Nickajack Lake and the Tennessee River; periodic diversion of water resources to Alabama via the Tombigbee Waterway; and use of aquifers for public and private purposes in Mississippi and for agriculture in Arkansas.

X. POTENTIAL INTRASTATE ISSUES AND OPPORTUNITIES

Because water has historically been in abundant supply in Tennessee, intrastate conflicts other than localized neighboring landowner disputes have been rare. However, as populations rapidly increase in communities across the State, the race to secure reliable and quality water supplies has intensified and will continue to intensify. When drought events or disagreements within the State among municipalities or utilities occur, state or local entities must mediate or resolve disputes among competing water supply interests. Congress considers the development of water supplies for domestic, municipal, and industrial purposes to be the primary responsibility of the states and local interests.⁸ However, within Tennessee, the roles and responsibilities of state and local authorities for allocating Tennessee's water resources among intrastate users are not entirely clear, and there may be opportunities going forward to establish standard, consistent processes, roles, and responsibilities for reaching water use and supply decisions.

⁸ See generally 43 U.S.C. § 390b(a).

A. Examples Showing Increased and Competing Demands within Tennessee

A number of recent and current issues in Tennessee demonstrate increased and competing demands for water resources throughout the state. As one example, Middle Tennessee's burgeoning population combined with the unprecedented 2006–2009 drought led the USACE to institute a moratorium in January 2010 on new or increased municipal and industrial water supply withdrawals from Old Hickory Lock and Dam, because the volume of withdrawals had reached the volume of natural inflows and further withdrawals would impact the authorized purposes of the project. The moratorium remains in place today.⁹

As a second example, in recent years the Town of Smyrna and USACE debated allocation of storage costs and subsequently, additional storage, from J. Percy Priest Reservoir, necessary for increased demand due to population growth. Disputes between Smyrna and USACE also highlighted the nationally-relevant issue of whether M&I water supply users with storage agreements on USACE projects receive direct credit for the water they return in the storage accounting process. In response to this issue, the Tennessee General Assembly enacted legislation in 2017 to address the issue of "return flows" in connection with water supply uses of a USACE reservoir. The new state law grants a person who has contracted for the right to store water in a USACE-owned reservoir the exclusive rights to any return flows that person generates directly or indirectly to that reservoir, provided that person has sufficient storage capacity in the reservoir to store those returns.¹⁰ USACE's proposed water supply rulemaking would codify its existing, generally prevailing practice of accounting for return flows, meaning

⁹ USACE. 2016. Old Hickory Lake Master Plan.

¹⁰ 2017 Public Chapter 220, codified at Tenn. Code Ann. § 69-3-108(u). When commenting on the fiscal impacts of this law, TDEC stated: "TDEC is not authorized to enforce this provision; therefore, any impact on TDEC expenditures will be not significant."

that all inflows to the reservoir, regardless of source, are credited to water supply storage accounts in proportion to their share of storage in the reservoir.¹¹

Although utilities that withdraw water from the Tennessee River system are not required to enter into water supply or storage agreements with TVA,¹² they face similar issues over competing demands from time to time. For instance, utilities dependent on the Duck River have expressed concerns regarding management of TVA's Normandy Dam to meet water quality standards and balance water supply demands both above and below the dam. The Duck River Development Agency developed a Comprehensive Regional Water Supply Plan in 2011 and a Duck River Regional Drought Management Plan in 2013 in an effort to combat drought in a manner that ensures water availability and continued economic development for utilities relying on the Duck River.¹³

Potential intrastate conflicts may also arise between towns (and utilities) connected by grant-funded water supply pipelines. Should they be resistant to sharing water resources due to potential revenue erosion or other concerns, utilities may choose to seek permitted increases from their own natural sources of water rather than exploring opportunities to share water resources and collaborate across service areas.

¹¹ Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply, Docket No. COE-2016-0016. 81 Federal Register 91558-91559. <https://www.federalregister.gov/documents/2017/05/16/2017-09861/use-of-us-army-corps-of-engineers-reservoir-projects-for-domestic-municipal-and-industrial-water>. The proposed rulemaking sought comment on an alternative approach in which inflows would be fully credited to the water supply storage account holder responsible for such flows, provided that the flows can be reliably measured.

¹² The Water Supply Act of 1958, 43 U.S.C. § 390b, only applies to USACE and Bureau of Reclamation reservoir projects. Section 6 of the Flood Control Act of 1944, 33 U.S.C. § 708, only applies to reservoirs under the control of the Department of the Army.

¹³ See generally *Duck River Comprehensive Regional Water Supply Plan and Drought Management Plan Report*, both accessible at <http://www.duckriveragency.org/projects.htm>.

Amidst rapid population growth in specific areas of the state, multiple users withdrawing from the same source and in some cases withdrawing from very special and limited resources may present location-specific water availability concerns. Such circumstances may warrant additional state involvement or increased regional cooperation as a means of managing competing demands. Given likely increases related to water availability issues, it could be in Tennessee's best interest to form a multi-disciplinary and multi-stakeholder approach to proactive water supply planning, allocation, management of flow regimes, and conflict resolution for use when applicable circumstances arise.

B. *Lack of Funding for Existing Regulatory Authority*

Existing statutes provide TDEC with the authority to engage in various activities that contribute to water use and supply planning. For example, the Water Resources Division Act (Tenn. Code Ann. § 69-7-101 *et seq.*) assigns TDEC the responsibilities of: directing the conservation, protection and development of water resources of the state through study of water resources and creation and development of a water resource policy for the state; establishing, maintaining, and publishing an inventory of the state's water resources; determining, maintaining, and establishing estimates of existing and future water use in the state; and implementing the water resource policy of the state by creating and defining the rights of respective competing users of the water resources of the state. Similarly, the Water

Resources Information Act (Tenn. Code Ann. § 69-7-301 *et seq.*) authorizes TDEC to gather water quantity data, including data and information on uses of water and well data.¹⁴

Prior to the State's current efforts to develop this plan, within the recent past, Tennessee has not exercised direct regulatory authority to fulfill these statutory obligations. This is apparently due to insufficient funding for administering this authority.¹⁵ There is an opportunity for the State to consider development and implementation of mechanisms that would provide TDEC with necessary funding for fulfilling these responsibilities, which could be used to support sufficient staff and monitoring equipment to adequately assess surface and groundwater resources and plan for future water resource needs.

C. *No Comprehensive Water Withdrawal Regulatory Framework*

Tennessee currently lacks a comprehensive regulatory mechanism for understanding the scale and frequency of water withdrawals and their potential impact to water quantity. In the absence of such a comprehensive framework, a patchwork of existing regulatory mechanisms has become an indirect means of regulating quantity associated with water withdrawal. For example, ARAPs, a permitting mechanism associated with the WQCA, apply to proposed water withdrawals that may affect the *quality* of a source stream by removing a significant portion of its flow. While ARAPs have functioned in a manner to address some aspects of the water withdrawal regulatory gap, an ARAP is not triggered with every

¹⁴ Notably, when the bill enacting this law was first introduced, it included a fee to cover costs associated with compilation of data. This provision was not included in the bill that passed.

¹⁵ It should be noted that TN H2O has been possible through the *voluntary* efforts of over 100 stakeholders and interested parties involved in planning committees, steering committees, and sub-committees over a period of 8 months. Throughout this process, input has also been sought from the public. Financial resources will be required to maintain and continually update this information on a recurring basis.

withdrawal. Only those with significant impacts to flow and the physical, chemical, and biological properties of the water body require a permit. In addition, a number of withdrawals are exempted from ARAP applicability, and ARAPs do not apply to groundwater withdrawals unless they would impact a surface water source. As a second example, the WRIA requires registration with TDEC prior to withdrawing 10,000 or more gallons of water per day from a surface water or groundwater source. Exemptions to the registration requirement exist for withdrawals for agricultural purposes and for inter-basin transfers of groundwater that do not adversely affect the flow of a Tennessee surface water. These and other exceptions to and gaps within existing regulatory requirements prevent the State from maintaining accurate data regarding water availability and water consumption.

D. Regional Planning

While coordinated regional planning to date has occurred in response to drought events, increased regional planning and coordination may also provide significant opportunity for communities to collaboratively plan for and respond to a variety of other natural and anthropogenic events. These include a number of operational and financial challenges that may be faced by public water systems, such as equipment, collection system, treatment, distribution deterioration, or financial insolvency. Regional planning documents could also be used as tools to aid water systems in making decisions that align with regional water needs in both the long- and short-term.

The Water Resources Technical Advisory Committee, formed in response to the 2006-2009 drought to make recommendations on water resources issues, developed numerous

planning resources that could be helpful in facilitating regional planning. These resources include the TDEC Drought Management Plan, requirements for community water systems to develop their own drought management plans, and guidelines for entities interested in pursuing regional water resources planning in Tennessee.¹⁶ While there are considerable opportunities for increasing utilization of regional planning, like flood planning and mitigation, numerous roles, responsibilities, and authorities exist at the federal, state, and local level. As such, the State should consider the pros and cons of taking a more active role in encouraging and coordinating regional planning, including how it can leverage grants, loans, and funding projects to facilitate increased collaboration among systems.

E. Resolving Disputes and Enabling Cooperation between Water Utility Systems

Tennessee statutes provide legal authority for the creation and operation of multiple forms of water utility systems within the State. However, there is currently not a statutory framework to address and mediate disputes between water utility systems (especially considering that the vast majority of water utility systems are not subject to TPUC jurisdiction). Similarly, no statutory authority exists to facilitate collaboration and cooperation between systems for the supply of water. Instead, most utility systems that desire to collaborate must go through the legislature's private act process, as opposed to being able to rely upon general statutory authority.

F. Drought Planning and Preparedness

¹⁶ <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-regional-planning.html>.

Historically, Tennessee’s most severe droughts have occurred in the western portion of the state and within a subset of Middle Tennessee. Drought planning and preparedness do not reside exclusively with a single organization in Tennessee, and instead, are addressed by a number of local, state, and federal agencies and programs. Events such the 2006-2009 drought and local droughts in 2012, late 2016, and early 2017 have fostered a desire for the State and its communities, businesses, and residents to prepare for future and likely increasing drought events.

TDEC maintains a Drought Management Plan (the “Plan”), which outlines TDEC’s approach for water management during extended periods of below average rainfall and streamflow. The Plan facilitates planning, action, and cooperation in water resources management among local, state, and federal agencies with drought-related responsibilities and includes requirements for community water systems to develop their own drought management plans separate from Emergency Operation Plans. TDEC has also issued guidance that outlines what information should be included in community water system drought management plans.¹⁷

Water control plans for multi-purpose USACE projects strike a balance among the use of water storage for all authorized purposes of the project. In response to a water shortage in a basin due to climatological drought, USACE drought contingency plans establish operational priorities for the basin, considering both authorized project purposes and USACE’s overall responsibility to manage water resources to ensure public health and safety. The Cumberland

¹⁷ https://www.tn.gov/content/dam/tn/environment/water/documents/droughtmgmtplan_guidance.pdf.

River Basin Drought Contingency Plan¹⁸ establishes the assurance of domestic water supply and associated water quality in the interest of public health and safety as the top operational priorities in response to a drought. Navigation is next on the priority list, followed by hydropower production, and then recreation.

TVA's general practice is to fill all of its reservoirs in the spring. During the summer, the water is released for minimum flows, thermal cooling, and power generation. During the fall, reservoirs are gradually reduced preparing the reservoirs for winter rain. Tributary storage reservoirs and local inflow provide the water necessary to maintain navigation on the mainstream reservoirs. Water may also be released from reservoirs during summer months after significant storm events to ensure adequate flood storage capacity.

G. Flood Planning and Mitigation

Floods are one of the most frequent and costly disasters in the United States and Tennessee.¹⁹ Although not strictly a water supply issue, efforts to mitigate floods by, for example, keeping reservoir levels low to make room for heavy rains and avoid downstream flooding, can reduce the amount of water available for other uses. Floods themselves can damage water supply infrastructure. Moreover, floods may also present opportunities for utilities to save and store excess water resources for use during water shortages.

Flood planning and mitigation do not reside within a single organization in Tennessee and instead are addressed by a number of local, state, and federal agencies and programs. At

¹⁸ <https://cdm16021.contentdm.oclc.org/digital/collection/p16021coll7/id/923>.

¹⁹ *State of Tennessee Hazard Mitigation Plan*. (2013). Tennessee Emergency Management Agency. <https://www.tn.gov/content/dam/tn/tema/documents/TennesseeHazardMitigationPlan-2013.pdf>

the state and local levels, flood-preparedness planning and mitigation occur through community planning and risk management, via programs or services offered by state agencies, or as a qualification for disaster assistance or other types of funding that make preparedness a contingency, such as the National Flood Insurance Program (NFIP)²⁰. The State of Tennessee is required by FEMA as well as state statute²¹ to maintain an approved Hazard Mitigation Plan (HMP). Tennessee's HMP is developed by the Tennessee Emergency Management Agency and describes the State's mitigation strategy for natural hazards adversely affecting its citizens and their property, including flooding.²² A number of Tennessee statutes grant authority to state agencies or local governments to engage in flood planning, preparedness, and mitigation activities, independently or collectively, oftentimes as part of zoning and building regulation.²³ Tennessee also has a number of watershed and basin authorities that directly implement flood reduction measures and projects.²⁴ One example is the West Tennessee River Basin Authority which exists to preserve the natural flow and function of West Tennessee's streams and rivers through environmentally sensitive stream maintenance.

²⁰ See Tenn. Code Ann. § 6-58-117 and § 12-4-109. The NFIP is a federally-subsidized flood damage insurance program administered by FEMA. In order for residents and business owners to be eligible to purchase flood insurance, communities must exchange a commitment to manage development in their special flood hazard areas according to minimum federal regulations. The NFIP is administered at the state level by TDEC and overseen by FEMA. The State of Tennessee has 401 communities that participate in the NFIP and 12 communities that belong to the NFIP Community Rating System, a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements via flood insurance premium rate discounts.

²¹ Tenn. Code Ann. §§ 58-2-101 through 58-2-124

²² *State of Tennessee Hazard Mitigation Plan*. (2013). Tennessee Emergency Management Agency. <https://www.tn.gov/content/dam/tn/tema/documents/TennesseeHazardMitigationPlan-2013.pdf>. Also, see Tenn. Code Ann. §58-2-101.

²³ See generally, Tenn. Code Ann. §§ 13-17-101, 13-17-201, 13-3-101, 68-221-1103, 69-5-101, 58-2-116, 4-3-501, 69-1-101 and Title 68.

²⁴ See generally, Tenn. Code Ann. §§ 64-1-101, 64-3-101, 69-6-101

Federal agencies such as the USACE²⁵ and TVA²⁶ actively oversee flood control measures associated with flood monitoring, flow management, and floodwater storage in reservoirs operated throughout the state. Additionally, agencies such as the National Weather Service and United States Geologic Survey provide support to local, state, and other federal agencies by monitoring and forecasting flooding in the State of Tennessee.

There is opportunity for the various parties involved in flood planning and mitigation activities to engage in more strategic coordination to prepare for future, and likely increasing, flooding.

H. *Valuation of Natural Resources*

Tennessee is home to unique and diverse natural resources and ecosystems, which contribute significantly to the State's economy and status as a desirable place to live, work, and play. In order to preserve these natural resources, sufficient water resources are necessary. As Tennessee prepares for the future, it should comprehensively consider the value of ecosystems and natural resources and factor such value into planning and decision-making relating to water supply and water utilization in particular, but also to proposed activities with the potential to significantly alter the availability of nearby water resources.

I. *Local Requirements / Groundwater and Land Use Restrictions*

²⁵ In addition to its mission-related objectives to deliver engineering services, strengthen the Nation's security, energize the economy and reduce risks from disasters, the USACE also established the National Flood Risk Management Program (NFRMP) in May 2006 for the purpose of integrating and synchronizing USACE flood risk management programs and activities, both internally and externally with counterpart activities of the Department of Homeland Security, FEMA, other Federal agencies, state organizations and regional and local agencies as well as non-governmental organizations.

²⁶ TVA manages a system of dams to control flooding along the Tennessee River watershed, and each year prevents about \$260 million in flood damage in the TVA region and along the Ohio and Mississippi Rivers.

Local requirements, such as board regulation, codes, and requirements relating to well construction, are increasingly important considerations for water use and supply. Local governments or the Commissioner of TDEC²⁷ may constrain groundwater availability via land use restrictions (LURs): regulatory ordinances designed to protect the public health in light of water-related dangers. In such circumstances, certain regions with local requirements or recorded LURs may face these additional challenges in overcoming water supply issues and emergencies. Further, while the local requirements' intent may be in a community's or property owner's best interest, full notification and transparency may be lacking in Tennessee.²⁸ Tennessee may consider opportunities for increasing public accessibility of information pertaining to local ordinances and LURs that may exist in locations with access to groundwater.²⁹

J. *Contaminants of Emerging Concern*

Emerging contaminants are chemicals that, until recently, had not been detected, or were detected in far lesser concentrations than they are today, in water resources. Examples of emerging contaminants include pharmaceuticals, personal care products, endocrine disrupting compounds, micro plastics and perfluorinated compounds. The scientific community is working to understand the effects of emerging contaminants on water quality, and subsequently human

²⁷ Tenn. Code Ann. § 68-212-225.

²⁸ LURs in the form of local ordinances do not always appear in title searches and are not readily available online. Given these circumstances, communities across the State often do not fully understand their potential water supply risks until emergency circumstances reveal local LURs. Further, it is not uncommon for a new landowner to make plans to install a well on his/her property with the intent of accessing groundwater, only to learn that such activity would not be allowable on that property due to an ordinance or LUR.

²⁹ There may be opportunities to enhance information currently offered to the public, such as TDEC's webpage or encourage municipalities with LURs to become members of Tennessee 811 (underground utilities notification center) and then use the Tennessee 811 system to alert landowners of potential LURs relating to groundwater prior to commencement of well construction.

health and the environment, and developing testing methods capable of detecting these compounds at levels deemed dangerous for human health within air, land, and water resources. As knowledge regarding these effects develops further, and as treatment technology evolves, Tennessee should seek to understand how the presence of and ability to treat water for emerging contaminants may impact water availability.

K. Conservation and Demand Management

Opportunities abound in Tennessee for water resource conservation and demand management. Two approaches for conservation and demand management include minimization of water loss and exploring opportunities for wastewater reclamation and reuse.

Water loss alone cost more than \$64 million annually in 2017 and accounts for over 51 billion gallons of wasted water a year.³⁰ Such monumental water losses (and subsequent increased withdrawals or expanded ARAPs) present significant opportunity for more efficient use of water (and energy) resources and associated financial savings to utilities. While some institutional and legal framework exists to address water loss through the WWFB and UMRB, development of a more direct and effective set of resources, policies, and incentives seeking to minimize water loss are necessary in Tennessee. Further, investor-owned water utilities, water cooperatives, and homeowner associations are not subject to the water-loss jurisdiction of the UMRB or the WWFB. No state agency monitors or regulates the amount of water loss of the water systems operated by these water utilities. Beyond the authorities provided to the UMRB

³⁰ Based on data reported by utilities and municipalities via the Comptroller's report on water loss. Estimates reflective of 78% of audits because 22% of the audits did not pass the filters recommended by AWWA.

and the WWFB to address water loss, the state has an opportunity to further incentivize water loss minimization through grant and loan programs.

Water reclamation and reuse also presents opportunities to use water resources more efficiently. Rapid growth in specific areas of the State has in many cases increased the cost of treating and disposing of wastewater. As receiving streams reach assimilative capacity, utilities and municipalities seek to meet total maximum daily loads (TMDLs);³¹ and as the cost of open space for treatment and disposal via land application increases, reuse of treated wastewater becomes an attractive and cost-effective alternative to using the potable water supply. In fact, Tennessee already has a number of municipalities and utilities engaging in wastewater reclamation and reuse for non-potable purposes. TDEC is aware of several communities throughout the State that are interested in pursuing potable reuse in the next ten to fifteen years. Additional policy encouraging water reclamation and reuse in Tennessee would further institutionalize efficient use of water resources.

L. *Watershed District Law*

Tennessee's Watershed District statutes govern the identification of individual watersheds throughout the State and regulation of boards designed to oversee each district. Tenn. Code Ann. § 69-6-101 *et seq.* Each watershed district then obtains a variety of corporate powers, including the ability to:

- Conserve soil and water to retard floods and develop water resources of the district;

³¹ A TMDL establishes the maximum amount of a pollutant allowed in a waterbody and serves as the starting point or planning tool for restoring water quality.

- Construct any works or improvements for the control, retention, diversion, or utilization of water;
- Extend district boundaries or merge with adjoining watershed or drainage districts in accordance with the procedure provided in this chapter;
- Exercise all powers conferred upon levee and drainage districts; and
- Acquire water rights and distribute or sell water for irrigation or for other purposes, either within or without the district.

Tenn. Code Ann. § 69-6-118. While this law is antiquated and appears primarily intended to address flooding, with some tweaking, it may be possible that this statutory framework could be used in ways that address water supply either in certain localities or statewide.