A Comparison of Groundwater Laws and Regulations from Southeastern States

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Carl Vinson Institute of Government
University of Georgia
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EXECUTIVE SUMMARY

In September 2003, Mr. Jimmy Palmer, U.S. Environmental Protection Agency (USEPA) Region 4 Administrator, initiated an unprecedented effort to bring stakeholders (representatives from the agricultural, industrial, state and local governmental, and tribal sectors) from across the southeastern United States together to begin discussions regarding the development of a regional water resources planning strategy. States in the southeastern United States, which also comprise USEPA Region 4, include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

To explore the development of a regional water resources planning strategy, the USEPA Region 4 staff organized a water resources track at the 2003 Southern States Environmental Conference and Exhibition. During that conference, executive leadership of major stakeholder organizations and key decision-makers from federal, tribal, state and local governments identified 12 goals and nine next steps toward a regional planning strategy.

In continuance of efforts to gain a comprehensive understanding of current statutory and regulatory authority for groundwater allocation and use, water quality management, and water resources management planning, the USEPA Region 4 contracted with the Carl Vinson Institute of Government to review relevant statutes and regulations in the eight states. Based upon that review, the Vinson Institute developed a matrix comparing the statutory and regulatory provisions and provided a brief discussion of those laws and regulations.

For purposes of determining rights to groundwater, subterranean waters were categorized as underground streams or percolating waters. Underground streams are those waters that could be demonstrated to flow in a defined channel. Courts in southeastern states applied the riparian rights doctrine to water use from those sources

Percolating waters were those that oozed, seeped or filtered through the soil. From a rights perspective, courts treated those waters as part of the real estate through which they moved. In many states, underground waters were presumed to be percolating waters, unless it could clearly be demonstrated otherwise. Courts used the absolute dominion doctrine to address disputes involving groundwater use. This doctrine allows an overlying landowner to withdraw an unlimited amount of water, regardless of injury to another landowner.

Courts in other states altered the absolute dominion doctrine to require that an overlying landowner's use be reasonable. An unreasonable use of groundwater is one that is adjudged to cause injury to a neighboring landowner. Use on non-overlying land was unreasonable *per se*. The reasonable use doctrine created a common property system for groundwater.

Courts in the Southeast applied the absolute dominion doctrine at times and the reasonable use doctrine at others. Courts in most states have settled on the reasonable use doctrine. Tennessee courts follow the correlative rights rule.

Most states in the Southeast have modified their common law doctrine through statutory enactments. Florida has completely replaced its common law with a comprehensive groundwater

use permitting program. Georgia, Mississippi, and Kentucky also require permits for groundwater withdrawals. Alabama, North Carolina, South Carolina and Tennessee require permits under certain circumstances. Some of those states also require persons withdrawing groundwater to register with the state.

Sources of high quality groundwater are vitally important to southeastern states in providing their citizens with a safe, healthy source of drinking water. Groundwater resources also provide water for industry, agriculture, and mining.

Groundwater contamination from releases of petroleum products, chlorinated solvents, pesticides, nitrates and other chemical pollutants, as well as fecal coliform bacteria and nitrate contamination from failing septic systems all threaten to lower the quality of groundwater in the Southeast. States with coastal regions face additional challenges of preventing salt water intrusion in coastal plain aquifers as a result of a rapid decline in the water levels or pressure.

Several southeastern states are in the process of implementing groundwater protection programs focused on protecting and preserving groundwater quality. They have developed groundwater quality standards, use classifications, and monitoring requirements to protect sources. Many potential groundwater pollutant sources require permits or approvals from state or federal agencies. Regulated facilities include landfills, industrial and domestic wastewater facilities, and onsite domestic waste disposal.

Proper water resource planning is essential to the development of effective water policies and programs. Water resource planning programs are implemented at many levels of government. Federal water resource planning has traditionally involved major public works projects and programs.

States also conduct an array of water resource planning activities. In general, state plans range from comprehensive water resource management plans to agency program plans. State law may also require agencies to develop strategic or program plans. Plans can focus on water supply and/or water quality. In addition to state-mandated plans and planning programs, states are often engaged in planning in response to federal requirement under the Clean Water Act or Safe Drinking Water Act. State water quality control agencies must develop program plans to maintain delegation and/or to receive financial assistance.

Local governments and coalitions of local governments (regions) generally include water resource provisions in two types of plans. Many local governments provide water supply or wastewater management services following adoption of service delivery plans. Local governments also consider water resources in land use planning and development decisions.

Most states in the Southeast have laws requiring the development of state water resource management plans. Florida and South Carolina have published comprehensive plans. Georgia has begun the development of its plan. State plans in Mississippi and North Carolina focus more on resource development/protection and management agency activities.

Several states also have water resource planning occurring at the regional level. Regions are usually formed by groups of counties. Florida has a comprehensive planning requirement for its water management districts, while Mississippi law requires the development and submission of a plan by a joint water management district as a condition of delegation of program authority.

North Carolina and Kentucky have statutory requirements for local planning. Plans in both states relate to the provision of public water supply services.

To meet the groundwater resource challenges this century, states must take bold steps to preserve and protect their water resources. As the complexity and frequency of conflicts among competing water users increases, common law remedies will prove inadequate. In response to these situations, states must consider further altering their common law doctrines through enactment of statutory provisions. Given the diversity of geographic and hydrologic conditions across the southeastern United States, no one-size-fits-all approach is available.

Because of the importance of high quality groundwater sources to the future development of southeastern states, it is imperative that states be more vigilant in efficiently implementing water pollution control and prevention programs. High quality groundwater must be available to support the needs of a growing population and expanding economic base. Groundwater and surface water quality standards must be designed to address the interactions between the two resources. As southeastern states move into the future, these important issues must be confronted and decisively addressed.

Comprehensive water resource management planning at federal, state, regional and local governmental levels is essential for the development of sound water policies and effective resource management programs. These broad-based efforts should serve to coordinate stakeholder actions in addressing water allocation and quality issues with regard to groundwater and surface water. They should include meaningful public participation opportunities so that the policies and programs developed truly represent society's values.

This report provides an extensive overview of state groundwater resource management laws in southeastern states. It can serve as the basis for discussions regarding the efficacy of programs and policies. It can also serve as a tool to coordinate water resource management efforts.

INTRODUCTION

Water is an essential resource. It is used for domestic purposes, such as drinking water and household uses, as well as in the manufacture of goods and provision of services. In addition, water is a necessary input for food and fiber production. Groundwater also provides essentially all flow to streams during drought periods.

States in the Southeast face several challenges in managing their water resources. Although most people consider this region to be water rich, competition for water resources has rapidly increased due to growth in population, water-dependent industrial and commercial development, and irrigated agriculture. This rivalry has been intensified by periods of water scarcity, limited availability of groundwater in some parts of the region, and water quality concerns.

The population in the southeastern states increased by 91 percent from 1960 to 2000. This increase has not been uniform across the region. Population increases in certain areas, such as highly urbanized areas and coastal counties, pose complex water resource management challenges. Increases in population have caused withdrawals for public water supply and domestic use to increase significantly. In most southeastern states, more than half of the population depends on groundwater as a source of drinking water. As the population continues to grow, water suppliers will have to seek an estimated 200 gallons per day for each person. Conservation efforts may reduce this amount. Additional water will also be needed to provide the goods and services to support the increased population.

In many areas, commercial, industrial and agricultural water use has also increased substantially. State economies have expanded significantly. Regional water supplies support petroleum refining, chemical and primary metals manufacturing, pulp and paper production and automobile fabrication. Irrigated agriculture has almost become an essential practice. Increases in irrigated acreage can be attributed regionally to (1) establishment of dependable and timely water supplies, (2) improvements in centrifugal pumps, and (3) competitive trends toward higher productivity over dryland farming and through practices such as double cropping.

Groundwater quality is also a concern. While portions of the region are underlain by high-yielding porous and dissolvable rock aquifers, less productive fractured rock aquifers lie beneath other parts. Regional aquifers serve as a significant source of good to excellent quality potable water, particularly in rural areas. Because of the hydraulic conductivity of these geologic formations, groundwater contamination from malfunctioning septic tanks, underground gasoline storage tanks, municipal solid waste landfills, hazardous substance sites, industrial activities, and agricultural chemical application may pose a significant threat to water supplies. Groundwater quality is also threatened in coastal areas from excessive withdrawals that potentially lead to salt water intrusion.

States are rising to meet these challenges by adopting statutory requirements for persons withdrawing groundwater. States have adopted laws, such as leaking underground storage tank abatement acts, to reduce the potential for groundwater pollution. States have also adopted

licensing requirements for water well drillers and established standards for design, construction, completion and abandonment of wells.

Most importantly, challenges have caused state and local governments to begin or increase their planning efforts. State officials have recognized that water supplies are not inexhaustible and that shortages are occurring on a periodic or chronic basis. It is no longer whether a shortage will occur or if growth will happen, but when will these situations arise. Planning in non-crisis situations is essential to effective water management.

COMPARISON OF GROUNDWATER WITHDRAWAL AND USE LAWS AND REGULATIONS

Water resources have been legally classified into three categories: watercourses, diffused surface waters and subterranean waters. Subterranean waters were further categorized as underground streams or percolating waters. Underground streams are those waters that could be demonstrated to flow in a defined channel. From a water rights perspective, courts applied the same doctrines to water use from underground streams as applied to surface streams. In the southeastern states, the relevant doctrine was the riparian rights doctrine.

Percolating waters were those that oozed, seeped or filtered through the soil. From a rights perspective, courts treated those waters as part of the real estate through which they moved. In many states, underground waters were presumed to be percolating waters, unless it could clearly be demonstrated otherwise. Courts applying the strict interpretation of ownership used the absolute dominion doctrine to address disputes involving groundwater use. This doctrine allows an overlying landowner to withdraw an unlimited amount of water, regardless of injury to another landowner. This doctrine treats groundwater as private property and followed the legal maxim, *cujus est solum ejus est usque ad coelum et ad inferos* (to whomever the soil belongs, he owns also to the sky and to the depths).

Courts in other states altered the absolute dominion doctrine to require that an overlying landowner's use be reasonable. An unreasonable use of groundwater is one that is adjudged to cause injury to a neighboring landowner. Use on non-overlying land was unreasonable *per se*. The reasonable use doctrine created a common property system for groundwater.

Tennessee courts essentially modified the absolute dominion doctrine as altered by a reasonable use rule even further. They determined that landowners should only be allowed to withdraw their share of water based upon overlying land ownership. The use must still be reasonable.

Because most water withdrawals were from surface water, groundwater rights law developed slowly. The application of appropriate legal principles was further hampered by a lack of complete understanding of the nature of the resource, as well as technological limitations in obtaining that understanding.

Courts in the Southeast applied the absolute dominion doctrine at times and the reasonable use doctrine at others. Courts in most states have settled on the reasonable use doctrine. Most states in the Southeast have modified their common law doctrine through statutory enactments.

The following matrices and accompanying discussion provide details on the provisions of these laws. The discussion also includes synopses of significant groundwater rights cases in each state.

Table 1. Comparison of Groundwater Withdrawal and Use Laws and Regulations

	Alabama[1]	Florida[2]	Georgia[3]	Kentucky[4]	Mississippi[5]	North Carolina[6]	South Carolina[7]	Tennessee[8]
Year enacted	**1993**	**1972**	**1972**	**1966**	**1985**	**1967**	**1969**	**2000**
Year last amended	**1993**	**2004**	**2003**	**1992**	**1999**	**1998**	**2000**	**2002**
Policy								
Beneficial use	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
Waste prevented		**X**		**X**	**X**	**X**		
Conservation encouraged	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
Conjunctive use					**X**			
Water is property of state/public interest	**X**	**X**		**X**	**X**	**X**		
Regulate through police powers/public interest	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Jurisdiction specified	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	
Responsible agency								
State agency	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Regional agency		**X**						
Local agency								
Decision maker								
Individual			**X**	**X**				**X**
Board/commission	**X**	**X**			**X**	**X**	**X**	

1 Ala. Code Ann. §§ 9-10B-1 through 9-10B-30 (Michie 2001)

2 Fla. Stat. Ann. §§ 373.013 through 373.28 (West 2000 and Supp. 2004)

3 O.C.G.A. §§ 12-5-90 through 12-5-106 (Lexis 2001)

4 Ky Rev. Stat. §§ 151.100 through 151.210 and § 151.990 (Michie 2001)

5 Miss. Code Ann. §§ 51-3-1 through 51-3-55 (West 1999)

6 N.C. Gen. Stat. Ann. §§ 143-215.11 through 143-215.22I (Lexis 2003)

7 S.C. Code Ann. §§ 49-5-10 through 49-5-150 (Lexis Supp. 2003)

8 Tenn. Code Ann. §§ 69-7-201 through 69-7-212; §§ 69-7-301 through 69-7-309 (2004)

Table 1. Comparison of Groundwater Withdrawal and Use Laws and Regulations (continued)

	Alabama	Florida	Georgia	Kentucky	Mississippi	North Carolina	South Carolina	Tennessee
Regulatory/management requirement								
Permit		X	X	X	X	X	X	X
Registration/certification	X					X	X	X
Scope								
Statewide	X	X	X	X	X	X	X	X
Designated area	X					X	X	
Threshold	100,000 gpd	Differs*	100,000 gpd	10,000 gpd	6 in**	100,000 gpd	3M gal/mo	10,000 gpd
Basis								
Total withdrawal	X		X	X	X	X	X	X
Consumptive use		X						
Exemptions	Y	Differs*	Y	Y	Y	N	Y	N
Domestic		X	X	X	X		X	
Agricultural				X				
Commercial								
Industrial								
Other	X			X	X		X	
Decision criteria specified	Y	Y	Y	Y	Y	Y	Y	Y
Permit/registration duration (years)	5-10	20-50	10-50	N	10***	10+****	10	5
Permit/registration quantified (gallons/day)	X	X	X*****	X	X	X	X	X
Forfeiture for non-use period	N	2 yrs	3 yrs	N	1-2 yrs	N	N	N
Use reporting required	Y	Differs*	Y*****	Y	Y	Y	Y	Y
Statewide water use data system maintained	Y	N	N	N	N	Y	Y	Y
Permit/registration revocation/modification authorized	Y	Y	Y	Y	Y	Y	Y	Y
Intrabasin transfers authorized	N	Y	Y	Y	Y	Y	N/A	
Interbasin transfers authorized	N	Y	Y	Y		Y	N/A	Y
Fees								
Application	N	Y	N	N	Y	Y	N	Y
Annual	N		N	N	N	Y	N	N

* Water management districts adopt regulations for withdrawals and use in their districts.
** Outer diameter of casing at the surface
*** Longer periods are authorized for public entities.
**** Duration of permits is also governed by the requirements upon the capacity use area.
***** Permits for farm uses are not quantified, have no duration, and are not subject to the reporting requirements.

Table 1. Comparison of Groundwater Withdrawal and Use Laws and Regulations (continued)

	Alabama	Florida	Georgia	Kentucky	Mississippi	North Carolina	South Carolina	Tennessee
Allocation preferences (non-emergency)	Y	N	Y	Y	Y	N	N	N
Domestic/human use	1		1	1	1			
Public water supply					1			
Agricultural					2			
Commercial/Industrial					2			
Other					3			
Allocation preferences (emergency)	Y	Differs*	Y	Y******	N	N	N	N
Domestic/human use	1		1					
Public water supply			1					
Agricultural			2					
Commercial/Industrial			2					
Other								
Enforcement/conflict resolution								
State agency	X		X	X	X	X	X	X
Regional entity		X						
Local government								
Court (injunctive relief)		X	X	X	X	X	X	
Penalties								
Civil liability	X							
Civil/administrative penalty	X	X	X	X	X	X	X	X
Criminal penalty			X		X	X	X	X
Appeal process specified	Y	Y	Y	Y	Y	Y	Y	Y

****** Kentucky law contains a general policy statement on allocation.

ANALYSIS OF STATE GROUNDWATER WITHDRAWAL AND USE LAWSAND REGULATIONS

ALABAMA

Alabama case law regarding the use of groundwater (i.e. percolating waters) appears to follow the reasonable use doctrine. Case law did allow for pursuance of nuisance claims, if interference with groundwater use occurred as the result of some activities.

In 1993, the Alabama Legislature adopted the Alabama Water Resources Act to provide the state with information on water use by large withdrawers. The Alabama Department of Economic and Community Affairs administers a program that requires registration of large water withdrawals. Registered users, who obtain a certificate of use, must annually report average daily use and peak daily use.

If a condition exists where existing or projected uses in an area exceed the availability of water in that area, the Alabama Water Resources Commission may designate the region as a capacity stress area. Following that designation, the law requires large withdrawers to obtain a permit from the Alabama Department of Environmental Management. The Water Resources Commission has designated no areas in Alabama as capacity stress areas.

Under its Water Resources Act, Alabama has created a data system to collect and manage water use data. The act provides for some coordination between the agency responsible for water resources management and the agency for groundwater quality control through the designation of capacity stress areas. Disputes regarding beneficial uses of water are still handled through litigation.

The regulations of the Alabama Department of Environmental Management require groundwater wells in the coastal zone to be permitted. These requirements apply to every new well or alteration of an existing well that extracts 50 gallons per minute or more and is located within the coastal zone or has a 50-year capture zone within the coastal zone.

General policy: Management of water use is governed by the Alabama Water Resources Act (A.C. §9-10B-1 et seq. (Supp. 2004)) (Act) and its accompanying regulations. The Act's legislative intent provides:

- waters of the state (surface and groundwater) are basic resources;
- human consumption is a priority use;
- waters should be conserved and managed for "full beneficial use;"
- no person's beneficial use shall be restricted, except in capacity stress areas.

(A.C. §9-10B-2)

Jurisdiction: Provisions of the Act apply to waters of the state, including "any spring, brook, creek, stream, river, pond, swamp, lake, reservoir, impoundment, sound, tidal estuary, bay, waterway, aquifer, or any other body or accumulation of water, surface water, or groundwater, public or private, natural or artificial." (A.C. §9-10B-3)

Responsible agency: The Alabama Water Resources Commission (AWRC) and the Office of Water Resources (OWR) of the Alabama Department of Economic and Community Affairs are designated to implement the Act. (A.C. §§9-10B-7 to 9-10B-16). The Act charges the Alabama Department of Environmental Management (ADEM) with issuance of any permits limiting withdrawals and maintenance of enforcement actions, if necessary. (A.C. §9-10B-2) The ADEM Coastal Division issues permits to groundwater wells in the coastal zone. (A.A.C. 335-8-2-.09)

Decision maker: The AWRC must designate regions as capacity stress areas. Implementation of a restriction on withdrawals would be done by the Alabama Environmental Management Commission (EMC) and the ADEM. (A.C. §9-10B-22 and §9-10B-23) The ADEM Coastal Division issues permits to groundwater wells in the coastal zone. (A.A.C. 335-8-2-.09)

Regulatory/management requirement: Persons subject to the Act must submit a declaration of beneficial use to OWR and receive a certificate of use. (A.C. §9-10B-19) Persons seeking to withdraw groundwater in the coastal zone must submit an application to the ADEM Coastal Division. (A.A.C. 335-8-2-.09)

Scope: Requirements to obtain a certificate of use apply statewide; however, any restrictions placed on withdrawals would only apply in designated capacity stress areas (CSA).

Threshold: Provisions requiring a certificate of use apply to public water supply systems, self-supplied water users diverting, withdrawing, or consuming 100,000 gallons or more per day, and large irrigators having the capacity to use 100,000 gallons or more per day. (A.C. §9-10B-20) Coastal zone groundwater well permits are only required for withdrawals of 50 gallons per minute or more. (A.A.C. 335-8-2-.09)

Exceptions: No certificate of use is required for the following:

- diversion, withdrawal, or consumption of less than 100,000 gallons per day;
- instream uses (e.g., recreation, navigation, hydropower generation); and
- certain impoundments of less than 100 acres.

(A.C. §9-10B-20)

Decision criteria specified: The Act requires the OWR to issue a certificate of use if the beneficial use will not interfere with other "presently known existing legal uses" and is consistent with the "objectives" of the Act. (A.C. §9-10B-21)

The Act requires the AWRC to designate a CSA based upon its review of the critical use study containing four alternatives (no action, conservation, water resources development, and restrictive use) and a determination that "the aggregate existing or reasonably foreseeable uses of the waters of the state in such area exceed or will exceed the availability of such waters and [designation] is required to protect the availability of the waters of the state." (A.C. §9-10B-21)

If the ADEM determines that the operation of the well will not adversely impact the existing groundwater quality, the department may issue a permit. If the operation would adversely affect drinking water wells, the ADEM may deny the permit. (A.A.C. 335-8-2-.09)

Duration: Certificates of use are issued for a five to ten year period at the discretion of the division chief of OWR. (A.A.C. 305-7-11-.02) Certificates may be renewed.

Use reporting: The Act and the OWR regulations require all persons holding a certificate of use to file a report annually estimating the average daily use and peak daily use.
(A.C. §9-10B-20; A.A.C. 305-7-12-.01)

Statewide water use data system: The OWR maintains a water use data system based upon annual reports.

Certificate modification/termination authorized: A person holding a certificate of use may request OWR to modify such certificate. The OWR may order modification if a discrepancy between the certificate of use and the declaration of beneficial use or water use reports. Violations of the Act, rules or terms of a certificate of use serve as grounds for termination. (A.A.C. 305-7-11-.03 and 305-7-11-.04)

Fees: The Act prohibits the OWR and the AWRC from charging and collecting fees for administration of the Alabama Water Resources Act. (A.C. §9-10B-29)

Allocation: Neither the Act nor its implementing regulations provide any preferences for allocation among users during non-emergency or emergency periods, except the legislative intent that human consumption has priority. (A.C. §9-10B-2)

Penalties: The Act authorizes the recovery of actual costs incurred by the OWR as a result of a violation through the filing and maintenance of an action in county circuit court. The OWR may also assess a maximum civil penalty of $1000 per violation, not to exceed $25,000 annually. The Act prescribes those factors that the OWR must consider in assessing a civil penalty.
(A.C. §9-10B-5)

State Case Law

- *Henderson v. Wade Sand & Gravel Company*, 388 So. 2d 900 (Ala. 1980): In this case, the defendant pumped groundwater from underneath plaintiff's land to such an extent that sinkholes opened up and ultimately caused plaintiff's house to sink and break apart. This ruling changed the controlling legal theory in land subsidence cases from a traditional negligence theory to a nuisance theory in the context of property damage caused by a continuing activity involving the use of underground water.

- *Adams v. Lang*, 553 So. 2d 89 (Ala. 1989): The plaintiffs, Adams and Armstrong, had artesian wells on their property used for watering cattle and pecan trees. The defendant, Lang, purchased neighboring property and drilled a well for supplying water to catfish ponds. The defendant's pumping stopped the plaintiffs' wells from flowing. The plaintiffs sought a permanent injunction under the law of nuisance. In affirming the lower court decision to deny the injunction, the Supreme Court applied the reasonable use rule for percolating groundwater. The Court ruled that no liability is incurred for a competing reasonable use.

- *Martin v. City of Linden,* 667 So. 2d 732 (Ala.1995): In this case, Martin sought an injunction to the drilling of a well by the City of Linden on a one-acre tract it owns approximately 15 miles from the city limits. The well would provide 500,000 gallons per day to city residents. Martin contended the pumping with damage the water table under her farm. In reversing a lower court ruling on the timing of the action, the Supreme Court held that the proposed used by the City of Linden was impermissible under the reasonable use rule.

FLORIDA

In 1972, the Florida Legislature adopted a statutory scheme based on *The Model Water Code*. Under the Code, those persons seeking to make consumptive use of water (except for individual residential users) must obtain a permit. The 1972 Act supplanted the common law groundwater rights. All unexercised riparian rights after a two-year period were thereby extinguished. Rights to use water in Florida arise either through the consumptive use permit or the exemption from the permitting requirement.

To implement the Act, Florida developed a two-tiered system of water management. The Florida Department of Environmental Protection exercises state-level administration of the program. This delegation allows inclusion of water quantity and water quality management in the same agency. Five water management districts administer the day-to-day activities of the program. The districts adopt regional rules for consumptive use permitting and permitting for storage of surface waters.

The structure adopted by Florida is more administratively complex than other southeastern states. Water management districts are given considerable autonomy to adopt rules and develop programs tailored to their regions.

Unlike most other states in the Southeast, Florida's law appears to provide a stronger property right in consumptive use permits. In addition, permits are transferable with the approval of the district governing board.

General policy: Consumptive water use is governed by the Florida Water Resources Act of 1972 (F.S. §373.013 et seq. (2004)). The policy stated in the Act provides:

- waters of the state are among its basic resources and are a public resource benefiting the entire state;
- water and related land resources should be managed on a state and regional basis;
- conservation, replenishment, recapture, enhancement, development, and proper utilization of surface water should be promoted;
- use of water from sources nearest the area of use or application should be encouraged, whenever practicable; and
- transport of water from distant sources may be necessary for environmental, technical, or economic reasons.

(F.S. §373.013)

Jurisdiction: Provisions of the Act apply to all waters of the state, including "water on or beneath the surface of the ground or in the atmosphere, including natural or artificial watercourses, lakes, ponds, or diffused surface water and water percolating, standing, or flowing beneath the surface of the ground, as well as all coastal waters within the jurisdiction of the state." (F.S. §373.016)

Responsible agency: The Florida Department of Environmental Protection (FDEP) is responsible for statewide administration, but the five water management districts (Northwest Florida Water Management District (NWFWMD), St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), Southwest Florida Water Management

District (SWFWMD), and Suwannee River Water Management District (SRWMD)) implement the Act on a day-to-day basis.

Decision maker: The governing boards of each water management district issue consumptive use permits required by the Act. (F.S. §373.219)

Regulatory/management requirement: Persons making consumptive use of water are required to get a permit, except for "domestic consumption of water by individual users." (F.S. §373.219) Some districts also provide for coverage of certain consumptive uses through general permits.

Scope: The requirement to get a permit applies statewide, but each water management district has adopted its own regulations/requirements for obtaining a permit.

Threshold: The governing board of each water management district has adopted threshold requirements for obtaining a consumptive use permit within its district. Some water management districts have established different thresholds for subregions/areas within their districts.

Exemptions: State law exempts domestic use. (F.S. §373.219) The governing board of each water management district may exempt other uses. Examples of exempted uses include firefighting purposes and self-supplied residential use. Reuse of potable reclaimed water and stormwater are not subject to certain permitting requirements. (F.S. §373.013)

Decision criteria specified: The Act specifies that the proposed water use must:

- be a reasonable-beneficial use as defined in s. 373.019;
- not interfere with any presently existing legal use of water; and
- be consistent with the public interest.

(F.S. §373.223)

Duration: The Act authorizes the issuance of permits for a 20-year term; however, each governing board may adopt a shorter duration based upon a permit classification system. Permits to public entities for publicly-owned treatment works may be issued for up to 50 years.
(F.S. §373.236)

Forfeiture for non-use: Florida law authorizes the revocation of a permit following non-use of the water supply for two years or more. (F.S. §373.243)

Use reporting: The governing board of each water management district adopts reporting requirements.

Permit modification/termination authorized: The Act authorizes permittees to seek modification of a permit; however, if the permit is for more than 100,000 gallons, the application for modification is treated like an initial application. (F.S. §373.239) The Act also provides several grounds for revocation of a permit. (F.S. §373.243)

Fees: Florida law authorizes the governing board of each water management district to establish fees. (F.S. §373.109) The governing board of each district adopts a schedule of permit application processing fees.

Allocation: When two competing applications are submitted for which an inadequate resource is available, the Act authorizes the governing board of a water management district to make its decision based upon the "public interest." However, the law also provides a preference for renewal applications over initial applications. (F.S. §373.233)

The Act authorizes the governing boards of water management districts place restrictions on classes of users during times of water shortage. (F.S. §373.246) The governing board of each water management district has adopted a water shortage plan that implements such requirements.

Penalties: Florida law authorizes the governing authority of each water management district to seek a maximum civil penalty of $10,000 per offense. (F.S. §373.129) Water management district boards have developed a civil penalty matrix for calculation of penalties.

State Case Law

- *The Village of Tequesta v. Jupiter Inlet Corp*., 371 So. 2d 663 (Fla. 1979): As a result of the plaintiff municipality drawing off an excessive amount of water from a shallow-water aquifer, the fresh-water supply for the city was endangered by saltwater intrusion into the aquifer. As a consequence, defendant developer could only supply water to its property by drilling a well to the Floridan aquifer at a substantially greater cost. The Court stated that in order to show a taking, defendant had to show that a private property right had been destroyed by a governmental action. However, defendant had no constitutionally protected right to the water beneath its property. Therefore, defendant was seeking to be compensated for a use which it had never perfected to the point that it was in existence. Defendant had a right to use the water, but the use itself is not existent until this right is exercised. Therefore, defendant had perfected no legal interest to the use of the water beneath its land which would support an action in inverse condemnation.

GEORGIA

Georgia common law principles on groundwater rights originally followed the absolute dominion doctrine. Over time, decisions began to restrict overlying landowners to a reasonable use of water. Common law gives the property owner the right to extract groundwater from under his/her property and use it for any reasonable purpose that does not "maliciously" waste or divert the water.

In 1972, the Georgia General Assembly adopted the Groundwater Use Act. As originally adopted, it called for designation of capacity use areas and required permits for large water uses in those areas. In the next session, the General Assembly amended the law to require permits statewide for municipal and industrial uses. The new permitting requirements did not include agricultural water withdrawals until 1988. Agricultural permit requirements are still vastly different from those for municipal and industrial sources. Agricultural permits contain no maximum volumetric limit on the annual amount of water withdrawn. These permits are issued in perpetuity and can be transferred upon the sale of land, without agency approval. Municipal and industrial users must report on withdrawals. Until recently, no agricultural water use measurement or reporting has been required.

Georgia's adoption of a permit system over its reasonable use common law system has created a regulated reasonable use doctrine for groundwater use in Georgia. Persons withdrawing large amounts are subject to the permitting requirements, while persons withdrawing amounts under the threshold are subject to the reasonable use common law doctrine.

General Policy: Surface water use is governed by the Ground-water Use Act of 1972 (O.C.G.A §12-5-90 through 12-5-106 (2004)). The policy stated in the Act provides:

- water resources of the state should be put to beneficial use to the fullest extent possible;
- reasonable regulation is needed to conserve these resources; and
- conditions conducive to the development and use of the resource should be maintained.

(O.C.G.A. §12-5-91)

Jurisdiction: Provisions of the Act apply to all waters of the state, including "all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and all other bodies of surface or subsurface water, natural or artificial, lying within or forming a part of the boundaries of the state which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation." (O.C.G.A. §12-5-22)

Responsible agency: The Environmental Protection Division (EPD) of the Georgia Department of Natural Resources (DNR) is responsible for permitting the withdrawal, diversion and impoundment of groundwater. (O.C.G.A. §12-5-96) The Board of Natural Resources adopts regulations for implementation of the Act. (O.C.G.A. §12-5-95)

Decision maker: The Director of EPD issues permits under the Act. (O.C.G.A. §12-5-96) The Board of Natural Resources sets agency policy and adopts rules and regulations.

Regulatory/management requirement: The Act requires persons withdrawing, obtaining or utilizing groundwater to get a permit, unless exempted. (O.C.G.A. §12-5-96)

Scope: The requirement to get a permit applies statewide. (O.C.G.A. §12-5-96)

Threshold: The provisions of the Act apply to persons withdrawing in excess of 100,000 gallons per day. (O.C.G.A. §12-5-96(a) (1))

Exemptions: No exemptions are provided by law.

Decision criteria specified: The Act allows the Director of the EPD to deny a permit, if the effect of the proposed use on water resources of the area is "contrary to the public interest." (O.C.G.A. §12-5-96(c) (4))

The Act requires the director to consider the following in evaluating an application:

- the number of persons using an aquifer and the necessity of their uses;
- the nature and size of the aquifer;
- the physical and chemical nature of any impairment of the aquifer;
- the probable severity and duration of such impairment;
- the injury to public health resulting from such impairment if not abated;
- the kinds of businesses or activities to which proposed uses are related;
- the importance and necessity of those uses;
- any detriment posed by those uses;
- any reduction of flows in watercourses or aquifers;
- provisions of a regional water development conservation and sustainable use plan, if available; and
- other relevant factors.

(O.C.G.A. §12-5-96(d))

Duration: The Act authorizes the issuance of permits for a term between 10 and 50 years. (O.C.G.A. §12-5-97(a)) The EPD issues a permit for a term between 10 and 20 years, but may extend the term to 50 years for public entities operating publicly owned treatment works subject to bonded indebtedness. Permits for farm uses have no duration. (DNR Rule 391-3-2-.07 (2004))

Forfeiture for non-use: Georgia law contains no provision for forfeiture of groundwater withdrawal permits for non-use.

Use reporting: Persons holding permits, except for farm uses and individual domestic uses, must report the quantities withdrawn, sources, and nature of use to EPD semiannually. (O.C.G.A. §12-5-97(d); DNR Rule 391-3-2-.08 (2004))

Permit modification/termination authorized: The Act authorizes the director to modify and revoke permits. (O.C.G.A. §12-5-96(c) (3))

Allocation: Georgia law requires that all permits issued by the director be consistent with a regional water development conservation and sustainable use plan, if one has been developed. (O.C.G.A. §12-5-96(e))

During times of emergency water shortage, the director may impose restrictions on permittees after opportunity for hearing. State law requires that water for human consumption receive the highest priority and water for farm uses the second priority. The importance of water for industrial use is not diminished. (O.C.G.A. §12-5-102)

Penalties: Georgia law imposes a maximum civil penalty of $1,000 per violation and an additional penalty of $500 per day for violation of the Act or an order of the director. (O.C.G.A. §12-5-106(a))

State Case Law

- *Saddler v. Lee*, 66 Ga. 45 (1879): The complainant, Saddler, sought an injunction to prevent Lee from damming a stream that traveled above and below ground at various points. Both parties are owners of mills that are relying on the flow for power. The decision distinguished between water flowing in an underground stream and percolating water by stating, "where the exact course and condition of a stream of water, after its first use, are well defined and ascertained, and the interference with the rights of a proprietor using the water of the stream, is not such as are supposed, but positive and certain, then trespass lies. If there exist under such a state of facts, sufficient grounds to give a court of equity jurisdiction to interfere by injunction, then that remedy would lie."

- *St. Amand v. Lehman*, 120 Ga. 253 (1904): In this case, the complainant sought to enjoin defendants from blasting a well on an adjacent lot. St. Amand alleged that the Lehman and his associates were constructing a well to complainant's mineral spring. The spring was fed by an underground stream running under defendant's land. The Georgia Supreme Court granted a temporary injunction pending the outcome of a jury trial. In its opinion, the Court noted that the complainant should prevail, if the defendants were "actuated by malice in wasting or diverting the water."

- *Stoner v. Patten*, 47 S.E. 949 (Ga. 1909): The plaintiff, Stoner, sought to enjoin Patten from interfering with the flow of a watercourse that lay at time above or below ground. In its decision, the Georgia Supreme Court held that non-malicious interference with underground waters is not actionable, unless the waters are part of a stream. The complainant bears the burden of proving that the stream "is well defined and its existence known or easily discernable." If proven, use of the water in the underground stream will be treated as the use of waters in surface streams.

KENTUCKY

In 1966, the Kentucky Legislature enacted requirements for persons withdrawing, diverting or transferring more than 10,000 gallons per day to get a permit. Permits authorize water to be withdrawn from a particular source for a specific use. Kentucky law exempts agricultural groundwater users from getting permits.

General Policy: Water withdrawal and use in Kentucky are regulated pursuant to Kentucky Revised Statutes §§151.100 to 151.210 and §151.990 (2004). Regarding water use policy, state law provides:

- the conservation, development, and proper use of the water resources of Kentucky are of vital importance;
- the general welfare requires that the water resources of the Commonwealth be put to the beneficial use to the fullest extent of which they are capable;
- waste or nonbeneficial use of water should be prevented; and
- conservation and beneficial use of water should be exercised in the interest of the people.

(K.R.S. §151.110(1) (2004))

Jurisdiction: Water withdrawal and use provisions apply to public waters of the Commonwealth which is defined to include "water occurring in any stream, lake, ground water, subterranean water or other body of water in the Commonwealth which may be applied to any useful and beneficial purpose." (K.R.S. §151.120 (2004))

Responsible agency: The Kentucky Department for Environmental Protection (KDEP) in the Environmental and Public Protection Cabinet (Cabinet) is responsible for permitting the withdrawal, diversion and impoundment of surface waters. (K.R.S. §151.140 (2004))

Decision maker: The Director of the KDEP issues permits under the Act.

Regulatory/management requirement: The Act requires persons withdrawing, diverting or transferring public water to get a permit, unless exempted. (K.R.S. §151.140 (2004))

Scope: The requirement to get a permit applies statewide. (K.R.S. §151.140 (2004))

Threshold: Persons withdrawing, diverting or transferring at an average rate of more than 10,000 gallons per day are required to get a permit. (401 K.A.R. 4:010 (2004))

Exemptions: State law exempts water use for:

- domestic purposes;
- most agricultural purposes, including irrigation;
- water use for production of electricity by steam generating plants regulated by the PSC; and
- use for underground injection in oil and gas production.

(K.R.S. §151.140 (2004) and 401 K.A.R. 4:010 (2004))

Agricultural users must obtain a permit if they withdraw more than an average of 10,000 gallons per day from an impoundment (K.R.S. §151.210 (2004)).

Decision criteria specified: The Act specifies that the permit must be issued if "an investigation … reveals that the quantity, time, place or rate of withdrawal of public water will not be detrimental to the public interests or rights of other public water users." State law prohibits denial of an application to "a responsible applicant who has established an amount of water for which he has a need for a useful purpose, provided the requested amount of water is available." (K.R.S. §151.170 (2004))

Use reporting: All permittees must report daily average withdrawals recorded monthly to the KDEP semi-annually. (401 K.A.R. 4:010 (2004))

Permit modification/termination authorized: State law allows the permittee to request modification and allows the Cabinet to modify a permit, if "reports indicate that the withdrawer is using a substantially different amount than permitted." (K.R.S. §151.170 (2004))

Allocation: During a water emergency declared by the Governor, Kentucky law authorizes the Cabinet to temporarily reallocate the "available public water supply among water users and restrict the water withdrawal rights of permit holders, until such time as the condition is relieved and the best interests of the public are served." (K.R.S. §151.200 (2004)) Neither state law nor the Cabinet's regulations specify any preferences for allocation during water emergencies.

Penalties: State law authorizes a maximum civil penalty of $1,000 per day for violations of K.R.S. §§151.100 to 151.460. (K.R.S. §151.990 (2004))

State Case Law

- *United Fuel Gas Co. v. Sawyers*, 259 S.W. 2d 466 (Ky. 1953): In this case, Sawyers brought an action for damages against United Fuel Gas Company for contamination of his residential water well resulting from drilling of a gas well on the adjoining property. In reversing the lower court's damage award, the Kentucky Court of Appeals applied the American rule or reasonable use rule to the groundwater withdrawals. In its reasoning, the Court noted that drilling of a gas well was a reasonable use and any damage that resulted from it was *damnum absque injuria* (injury without legal remedy).

MISSISSIPPI

In 1976, the Mississippi Legislature adopted legislation authorizing the Department of Natural Resources to designate areas experiencing extreme water shortages as "capacity use areas." Following designation as a capacity use area, persons withdrawing groundwater could be required to obtain a permit. Given problems with designating areas as capacity use areas, the Legislature repealed the law in 1988.

In 1985, the Mississippi Legislature adopted sweeping changes to the state's water resource management laws. One bill created a state system for managing both surface water and groundwater. A second bill authorized for the establishment of substate/regional districts to provide more local management of resources.

Mississippi law requires persons seeking to use groundwater to obtain a permit, unless otherwise exempted. The law exempts wells with a surface casing diameter of less than six inches from permitting requirements. Permits usually have a ten-year duration and may require periodic use reporting.

General policy: Water withdrawal and use in Mississippi are regulated pursuant to Mississippi Code Annotated §§51-3-1 through 51-3-55 (2004) (Act). Regarding water withdrawal and use policy, state law provides:

- all surface water and groundwater belongs to the people of Mississippi;
- the control and development and use of water is an exercise of the state's police powers;
- the general welfare of Mississippians requires the water resources of the state be put to beneficial use to the fullest extent possible;
- waste or unreasonable use should be prevented;
- conservation should be exercised; and
- conjunctive use of groundwater and surface water should be encouraged.

(M.C.A. §51-3-1 (2004))

Jurisdiction: Water withdrawal and use provisions apply to all water. Water withdrawal and use regulations define waters of the state as "all waters within the jurisdiction of this state, including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, springs, and all other bodies or accumulations of water, surface and underground, natural or artificial, situated wholly or partly within or bordering the state; except lakes, ponds or other surface waters which are wholly landlocked and privately owned, and which are not regulated as waters of the United States under Section 404 of the Clean Water Act."
(M.R. LW-2, Section I (OO))

Responsible agency: The Office of Land and Water Resources (OLWR) of the Mississippi Department of Environmental Quality (MDEQ) implements the water use and protection regulations on a day-to-day basis. (M.C.A. §51-3-16 (2004)

Decision maker: The Mississippi Commission on Environmental Quality (MCEQ) sets state policy, adopts rules, and hears enforcement cases. (M.C.A. §51-3-25 (2004)) The Environmental Quality Permit Board (Permit Board) issues permits. (M.C.A. §51-3-15 (2004)) The Permit

Board may delegate its authority to act on permit applications to the Executive Director of the MDEQ.

Regulatory/management requirement: The Act requires persons using water to get a permit, unless exempted. (M.C.A. §51-3-5 (2004)) State groundwater regulations prohibit issuance of permits for some uses. (M.R. LW-2, Section IV (D))

Scope: The requirement to get a permit applies statewide. (M.C.A. §51-3-5 (2004))

Threshold: Wells with a casing diameter at the surface of six inches or more are required to obtain a permit. (M.C.A. §51-3-7(1) (2004))

The Permit Board may not permit any use that would cause mining of any aquifer, unless the Board finds that the use is essential to the safety of human life and property.
(M.C.A. §51-3-7 (2004))

Exemptions: Wells used for domestic purposes of one household and relief well are exempt from permitting requirements. (M.R. LW-2, Section IV (A))

Decision criteria specified: The EQPB may deny a permit if the proposed use:

- is not for a beneficial purpose;
- would adversely interfere with existing permitted uses; or
- conflicts with the public interest.

(M.C.A. §51-3-13 (2004) and M.R. LW-2, Section II (E))

Duration: Permits are issued for ten years. However, public entities may be permitted for longer periods to amortize investments in treatment works. (M.C.A. §51-3-9 (2004))

Forfeiture for non-use: If the construction of a public water supply well has not begun with two years of permit issuance, the permit is void. If other types of well systems have not begun construction within one year, the permit is null and void. (M.R. LW-2, Section II (F) (2004))

Use reporting: State law authorizes the MCEQ to adopt rules requiring reporting as a condition of a permit, but emphasizes that persons using in excess of 20,000 gallons per day can be specifically required to report. (M.C.A. §51-3-23 (2004); M.R. LW-2, Section IV (E) (2) (2004))

Permit modification/termination authorized: Permits may be modified for:

- change in beneficial use or volume;
- change in diversion location;
- change in permit parameters, if requested by holder;
- change in permit conditions;
- correcting substantive errors; or
- responding to legislative or judicial action.

(M.R. LW-2, Section II (G) (2004))

Permits may also be revoked based on several grounds. (M.R. LW-2, Section II (H) (2004))

Fees: Mississippi law assesses a $10 permit application fee. (M.C.A. §51-3-31 (2004))

Allocation: State groundwater regulations establish the following prioritization of beneficial uses for consideration in permitting decisions among competing applications in non-emergency situations:

- Public supply;
- Industrial/commercial uses (including agricultural and commercial livestock uses);
- Enhancement of wildlife habitat and other recreational uses; and
- Other uses.

Penalties: State law authorizes a maximum civil penalty of $25,000 per offense for violations of regulations or orders of the MCEQ. (M.C.A. §51-3-55 (2004)) Mississippi law also imposes a misdemeanor criminal penalty upon any person convicted of violating a regulation or order. The minimum fine under such penalty is $100 per day. (M.C.A. §51-3-55 (2004))

State Case Law

- *Clarke County v. Mississippi Lumber Co.* 31 So. 905 (Miss. 1902): In this case, the complainant, Clarke County Board of Supervisors, sought injunctive relief to prevent the defendant from pumping sufficient quantities from its well to lower or stop the flow of artesian wells in the surrounding area (City of Quitman and private wells in Clarke County). The defendant used well water in the operation of its saw mill. In its opinion, the Court notes that groundwater is presumed to be percolating, unless the presence of an underground stream can be established. Although not explicitly stating so, the Mississippi Supreme Court appears to adopt the reasonable use rule for groundwater withdrawals. Under that rule a person making a reasonable use of groundwater is not liable for damages due to non-malicious interference with another person's use.

NORTH CAROLINA

North Carolina courts have applied the reasonable use rule in cases dealing with groundwater withdrawal and use disputes. Since North Carolina has not adopted a statewide withdrawal permitting program, disputes are still subject to resolution through common law.

In 1967, the North Carolina General Assembly adopted the Water Use Act to regulate surface water and/or groundwater withdrawals in areas of the state experiencing chronic availability problems. Before groundwater withdrawals can be regulated, the Environmental Management Commission must establish a capacity use area. To date, the commission has designated one area. The district originally encompassed eight counties, but has now been expanded to include 15 counties. Persons withdrawing more than 100,000 gallons per day from groundwater must obtain a permit from the Department of Environment and Natural Resources. State law also requires certain interbasin transfers of groundwater to register with the department. In that capacity use area, a permitted water user may sell or transfer to other users a portion of his or her permitted withdrawal. The original permittee must request a permit modification to reduce his or her permitted withdrawal and the proposed recipient must apply for a new or amended withdrawal permit. (N.C.A.C. 15A, 02E .0502(o))

General policy: Water withdrawal and use in North Carolina are regulated pursuant to Water Use Act of 1967 (N.C.G.S. §§143-215.11 through 143.215.22I (2004)). Regarding water withdrawal and use policy, state law provides:

- water resources should be put to beneficial use to the fullest extent possible;
- these resources should be conserved; and
- conditions conducive to the development and use of water resources should be maintained.

(N.C.G.S. §143-215.11 (2004))

Jurisdiction: Water withdrawal and use provisions apply to all waters, which are defined to include "any stream, river, brook, swamp, lake, sound, tidal estuary, bay, creek, reservoir, waterway, or other body or accumulation of water, whether surface or underground, public or private, or natural or artificial, that is contained in, flows through, or borders upon any portion of this State, including any portion of the Atlantic Ocean." (N.C.G.S. §143-212 (2004))

Responsible agency: The North Carolina Department of Environment and Natural Resources (NCDENR) implements the water use and protection regulations on a day-to-day basis.

Decision maker: The North Carolina Environmental Management Commission (NCEMC) delineates capacity use areas and acts on permit applications and applications for certificates authorizing interbasin transfers. (N.C.G.S. §§143-215.13, 143-215.15 and 143-215.22 (I) (2004))

Regulatory/management requirement: The Act requires permits for regulated uses in capacity use areas. (N.C.G.S. §143-215.15 (2004)) North Carolina law also requires a certain persons withdrawing water or transferring water interbasin to register such withdrawals/transfers. (N.C.G.S. §143-215.22 (H) (2004)) A person who makes certain interbasin transfers of surface water must obtain a certificate from the NCEMC.

Scope: The requirement to obtain a permit only applies in capacity use areas. (N.C.G.S. §143-215.15 (2004)) The registration and interbasin transfer certification requirements apply statewide. (N.C.G.S. §§143-215.22 (H) and 143-215.22 (I) (2004))

Threshold: State law requires persons withdrawing, obtaining or utilizing 100,000 gallons per day or more of groundwater in capacity use areas to obtain a permit. (N.C.G.S. §143-215.15 (2004)) The NCEMC may prohibit the installation of a new well withdrawing in excess of 10,000 gallons per day in a capacity use area. (N.C.G.S. §143-215.13(d) (2) (2004)) North Carolina law also requires any person who withdraws 100,000 gallons per day or more, or transfers 100,000 gallons per day or more interbasin to register such withdrawals/transfers. (N.C.G.S. §143-215.22 (H) (2004)) Agricultural users are only subject if they transfer more than 1,000,000 gallons per day. (N.C.G.S. §143-215.22 (H)(b)(1) (2004))

Exemptions: No uses are exempted from the permitting requirements in capacity use areas.

Exemptions for the registration requirement include:

- any person withdrawing or transferring less than 1,000,000 gallons per day of water for "activities directly related or incidental to the production of crops, fruits, vegetables, ornamental and flowering plants, dairy products, livestock, poultry, and other agricultural products;" and
- a unit of local government that has completed and updated its local water supply plan.

(N.C.G.S. §143-215.22 (H) (2004))

Decision criteria specified: In making its decision on permits in capacity use areas, the NCEMC is to consider the following factors:

- existing users and the necessity of their uses;
- the nature and size of the stream or aquifer;
- the physical/chemical nature of any water impairment;
- the severity and duration of such impairment;
- the injury to public health that would result if the impairment were not abated;
- the types of businesses/activities to which the various uses are related;
- the importance and necessity of those uses;
- reductions in flows in watercourses or aquifers; and
- other relevant factors.

(N.C.G.S. §143-215.15 (2004))

Duration: The NCEMC issues permits for the longer of 10 years, the existence of the capacity use area, or a period necessary for reasonable amortization of the applicant's water-withdrawal and water-using facilities. (N.C.G.S. §143-215.16 (2004))

Registrations must be updated every five years. (N.C.G.S. §143-215.22(H) (2004))

Use reporting: State law authorizes the NCEMC to require use reporting of the quantity of water withdrawn and used, source of the water, and the nature of the use no more frequently than monthly. (N.C.G.S. §143-215.16 (2004))

Permit modification/termination authorized: The NCEMC may modify or revoke permits. (N.C.G.S. §143-215.15 (2004))

Fees: North Carolina law authorizes the NCEMC to establish a maximum fee of $1,500 annually for administering and compliance monitoring of water use permits. The law also authorizes a maximum fee of $50 for processing registrations. (N.C.G.S. §143-215.3 (2004))

Allocation: State law or regulations do not contain any prioritization of groundwater withdrawal and uses during emergency or non-emergency periods.

Penalties: North Carolina law authorizes a maximum civil penalty of $100 to $250 per offense for violations of law, rules, or orders of the NCEMC. If the violation is willfully committed, the maximum penalty is $250 per day. The law also imposes a class 3 misdemeanor criminal penalty with a fine of $100 to $1,000 for each violation upon any person convicted of violating a law, rule, or order. If the criminal violation is willful, each day constitutes a separate violation. (N.C.G.S. §143-215.17 (2004))

State Case Law

- *Rouse v. City of Kinston*, 123 S.E. 482 (N.C. 1924): In this case, Rouse sought to recover damages from the City of Kinston when his artesian wells ceased to flow following the sinking of three ten-inch wells by the city on neighboring property. The city was supplying water to it inhabitants. In affirming a trial court judgment awarding damages to the plaintiff, the North Carolina Supreme Court applied the reasonable use rule for groundwater withdrawals from percolating waters.

- *Jones v. Home Building Loan Association*, 114 S.E.2d 638 (N.C. 1960): In this action, the plaintiff sought to recover damages from the defendant for "wrongfully obstructing" an underground stream thereby flooding the plaintiff's basement. The trial court ruled for the plaintiff and awarded $7,000 in damages. In reversing the ruling, the Supreme Court found the plaintiff's evidence of an underground stream to be insufficient. A presumption exists that groundwater is percolating water, unless it can be clearly demonstrated that the stream flows in a channel known to the overlying landowner or that it can be determined by surface features.

- *Bayer v. Nello Teer Company*, 124 S.E.2d 552 (N.C. 1962): Raymond and Catherine Bayer sought to recover damages for actions at the defendant's rock quarry. Among the allegations was the contamination of the plaintiff's well due to withdrawals of percolating water. The jury awarded damages to the plaintiffs. The Supreme Court reversed this part of the ruling based upon application of the reasonable use rule. The Court found that the defendant operated its quarry in accordance with standard practices and was making a reasonable use of the water.

SOUTH CAROLINA

There is no relevant South Carolina state case law concerning groundwater withdrawal and use. In 1969, the South Carolina Legislature adopted the Groundwater Use and Reporting Act. This act establishes a permitting system for groundwater withdrawals in excess of 100,000 gallons per day in designated capacity use areas. To date, the state has delineated four areas composed of 12 counties.

General policy: Water withdrawal and use in South Carolina are managed pursuant to the Groundwater Use and Reporting Act (S.C.C.A. §§ 49-5-10 through 49-5-150 (2003)). The Act provides the following general policy statements:

- water resources of the state should be put to beneficial use to the fullest extent possible;
- reasonable regulation is needed to conserve these resources; and
- conditions conducive to the development and use of the resource should be maintained.

(S.C.C.A. §49-5-20 (2003))

Jurisdiction: The provisions of the Act apply to persons withdrawing groundwater, which is defined as "water in the void spaces of geologic materials within the zone of saturation." (S.C.C.A. §49-5-30 (2003))

Responsible agency: The South Carolina Department of Health and Environmental Control (SCDHEC) implements the registration program. The South Carolina Water Resources Commission (SCWRC) issues permits for withdrawals in designated capacity use areas.

Regulatory/management requirement: The Act requires registration of groundwater withdrawals. (S.C.C.A. §49-5-40 (2003)) Groundwater withdrawers in a designated capacity use area must obtain a permit to construct a new well or increase the rated pump capacity on an existing well. (S.C.C.A. §49-5-100 (2003))

Scope: The registration requirements apply statewide, but the permit requirement only applies in capacity use areas.

Threshold: Groundwater withdrawers are defined to include any "person withdrawing groundwater in excess of 3,000,000 gallons during any one month from a single well or from multiple wells under common ownership within a one-mile radius from any one existing or proposed well." (S.C.C.A. §49-5-30 (2003))

Exemptions: The Act exempts the following from all provisions of the Act:

- emergency withdrawals;
- withdrawals for nonconsumptive uses;
- withdrawals for wildlife habitat management;
- withdrawals for a single-family residence; and
- certain aquifer storage and recovery wells.

(S.C.C.A. §49-5-70(A) and (C) (2003))

South Carolina law also exempts the following uses from the permitting and public notification requirements:

- dewatering operations;
- open-hole wells in crystalline bedrock; and
- replacement wells.

(S.C.C.A. §49-5-70(B) (2003))

State law authorizes the SCDHEC to exempt other *de minimis* withdrawals. (S.C.C.A. §49-5-70(D) (2003))

Decision criteria specified: No decision criteria are specified in law. Decision criteria are specified in the rule that establishes each capacity use area. These criteria include the following factors:

- the number of persons using an aquifer and the necessity of their uses;
- the nature and size of the aquifer;
- the physical and chemical nature of any impairment of the aquifer;
- the probable severity and duration of such impairment;
- the injury to public health resulting from such impairment if not abated;
- the kinds of businesses or activities to which proposed uses are related;
- the importance and necessity of those uses;
- any detriment posed by those uses;
- any reduction of flows in watercourses or aquifers;
- documented evidence provided by the applicant; and
- other relevant factors.

(S.C.R. 121-1.5 (2003))

Duration: The SCWRC issues permits for the longer of 10 years, the existence of the capacity use area, or a period necessary for reasonable amortization of the applicant's water-withdrawal and water-using facilities. (S.C.R. 121-1.7 (2003))

Use reporting: South Carolina law requires registered and permitted groundwater withdrawers to file a report annually showing the quantity of water withdrawn. Withdrawers reporting such information under another environmental program are exempted from reporting requirements. (S.C.C.A. §49-5-90 (2003))

Modification/revocation of permit: The Act authorizes the modification and revocation of permits. (S.C.C.A. §49-5-110 (2003)) Grounds for revocation are provided in S.C.C.A. §49-5-100 (2003).

Allocation: Neither law nor any associated regulations contain any prioritization of surface water diversion and uses during emergency or non-emergency periods.

Penalties: The Act authorizes a maximum civil penalty of $1,000 per day for violations of the Act or associated regulations. The law also imposes a misdemeanor criminal penalty with a maximum fine of $1,000 per day for willful violations. (S.C.C.A. §49-5-120 (2003))

State Case Law

There is no significant South Carolina state case law concerning groundwater use issues.

TENNESSEE

Tennessee courts apply the correlative rights rule to common law groundwater withdrawal disputes. Because the state has not adopted a comprehensive permitting system, disputes are still handled through litigation.

The Tennessee Legislature has modified their common law doctrine by statutory enactments. The Inter-basin Water Transfer Act requires permits for certain transfers between river basins. The Water Resources Information Act requires any person withdrawing 10,000 gallons or more per day to register with the Tennessee Department of Environment and Conservation.

General policy: Aspects of water withdrawal and use in Tennessee are managed pursuant to two laws. The Inter-basin Water Transfer Act (IBT Act) (T.C.A. §§69-7-201 through 69-7-212 (2004)) requires permits for certain transfers. The Tennessee Water Resources Information Act (Information Act) (T.C.A. §§69-7-301 through 69-7-309 (2004)) imposes registration requirements on certain persons withdrawing water.

Provisions of the IBT Act provide the following policy statements:

- it is prudent to engage in planning for the future;
- inter-basin transfers can raise issues of the protection of the public health, safety, welfare and the environment;
- common law solutions rely on after-the-fact litigation; and
- the state should have a mechanism to regulate diversions of water from one river basin to another.

(T.C.A. §69-7-202 (2003))

The Information Act was enacted to "institute a system of registration so that adequate information is obtained to document current demand for water and to project growth in that demand." (T.C.A. §69-7-302 (2003))

Jurisdiction: The provisions of the IBT Act apply to surface waters and groundwater, if the withdrawal of groundwater has an adverse impact on surface water flows. The registration requirements of the Information Act apply to withdrawals for surface water or groundwater.

Responsible agency: The Tennessee Department of Environment and Conservation (TDEC) implements the laws relating to water resources management.

Decision maker: The Commissioner of the TDEC issues permits and collects and processes groundwater registrations. ((T.C.A. §§ 69-7-205 and 69-7-305 (2003))

Regulatory/management requirement: The IBT Act requires permits for certain persons withdrawing and transferring water interbasin. (T.C.A. §69-7-204 (2003)) The Information Act requires registration of withdrawals. (T.C.A. §69-7-304 (2003))

Scope: The permit requirements and registration requirements apply statewide.

Threshold: The IBT Act does not contain a numerical threshold, but primarily applies to withdrawals of public water supply systems and persons providing water to public water supply systems. (T.C.A. §69-7-204 (2003))

The Information Act applies to any person withdrawing 10,000 gallons or more per day. (T.C.A. §69-7-304 (2003))

Exemptions: No uses are exempted from the permitting requirements under the IBT Act. (T.C.A. §69-7-204 (2003))

Exemptions from the registration requirement include:

- any person withdrawing water for emergencies involving human health and safety on a non-recurring basis; and
- any person withdrawing water for agricultural purposes.

(T.C.A. §69-7-304 (2003))

Decision criteria specified: In deciding on the issuance of a permit for interbasin transfer, the Commissioner of the TDEC must consider:

- quantity of the proposed withdrawal and flows in the losing river basin
- present and projected stream uses of the losing river basin;
- adverse impacts on water quality of the losing river basin;
- reasonably foreseeable future water needs of the losing river basin;
- reasonably foreseeable future water needs of the applicant;
- beneficial impact of the proposed transfer;
- the nature of the applicant's use of the water (reasonable and beneficial);
- whether the proposed project would increase conservation of water;
- the feasibility of alternative sources of supply and their costs;
- requirements of other state or federal agencies;
- availability of water in the losing river basin in times of shortage;
- whether the project will have any beneficial or detrimental impact on in-stream uses;
- quantity, location and timing of return flow;
- climatic conditions;
- offsetting increases in basin of origin flows;
- number of downstream river miles; and
- other factors necessary to implement the law.

(TDEC Rule 1200-4-13-.05 (2004))

Duration: Permits under the IBT Act are issued for five years. (T.C.A. §69-7-206 (2003)) The Information Act requires an annual registration. (T.C.A. §69-7-304 (2003))

Use reporting: Interbasin transfer permits may contain reporting requirements. (TDEC Rule 1200-4-13-.06 (2004)) Persons subject to the Information Act must reports amounts withdrawn annually with their registration renewal. (T.C.A. §69-7-305 (2003))

Permit modification/termination authorized: The Commissioner of the TDEC may modify or revoke permits for "(1) a violation of any terms or conditions of the permit or of any provision of this part; (2) obtaining the permit by misrepresentation or failing to disclose fully all relevant facts; or (3) a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted inter-basin transfer because of reasonably likely adverse impacts to downstream users or the environment." (T.C.A. §69-7-206 (2003))

Fees: The TDEC collects application processing fees for interbasin transfer permits. Fees range from $250 for small flows to $1,000 per 500,000 gallons per day.
(TDEC Rule 1200-4-13-.03 (2004))

Allocation: Neither state law nor regulations contain any prioritization of surface water diversion and uses during emergency or non-emergency periods.

Penalties: The IBT Act authorizes a maximum civil penalty of $10,000 per day per violation of the act. (T.C.A. §69-7-208 (2003))

The Information Act allows the imposition of a civil penalty of $50 to $7,500 per day for each violation of a provision of the act, or a regulation or order issued under the act. The Information Act also prescribes that intentionally violating, or failing, neglecting, or refusing to comply with any of the provisions of the act or its regulations constitutes a Class C misdemeanor.
(T.C.A. §69-7-307 (2003))

State Case Law

- *Tennessee Electric Power Co. v. Van Dodson*, 14 Tenn. App. 54 (1931): Dodson brought this action against Tennessee Electric Power Company to recover damages for flooding a portion of his farm due to the construction of a dam across Caney Fork River. The plaintiff alleged the dam obstructed the flow of an underground stream. The jury awarded damages to Dodson. In reversing that ruling, the Tennessee Court of Appeals stated that an underground stream is governed by the same rights as a surface watercourse. The plaintiff's evidence was insufficient to show that the defendant's action obstructed the groundwater flow.

- *Nashville, Chattanooga and St. Louis Railway v. Rickert*, 89 S.W. 2d 889 (Tenn. 1936): The railway company sought to enjoin Rickert from pumping water from a "sinkhole reservoir" thereby diminishing the plaintiff's flowing well. The defendant was going to allegedly use the water a bathhouse and municipal supply. The trial court enjoined the defendant pumping water so as to reduce the plaintiff's flow. In affirming the judgment, the Appeals Court applied the reasonable use rule.

COMPARISON OF GROUNDWATER QUALITY LAWS AND REGULATIONS

Sources of high quality groundwater are vitally important to southeastern states. All eight states in this region rely to a greater or lesser extent on groundwater to provide their citizens with a safe, healthy source of drinking water. In Florida, for example, more than 90 percent of the population has their drinking water needs met by groundwater. In addition to acting as a source of potable water, groundwater resources provide for the water needs of industry, agriculture, industrial mining, and in some cases, electrical power generation. Growing populations and increased water demands are placing strains on groundwater resources, rendering them vulnerable to contamination from a variety of commercial, industrial, residential and agricultural sources. Groundwater contamination from releases of petroleum products, chlorinated solvents, pesticides, nitrates and other chemical pollutants, as well as fecal coliform bacterial contamination from failing septic systems all threaten to lower the quality of groundwater in the Southeast. States with coastal regions face the additional challenge of preventing salt water intrusion in coastal plain aquifers as a result of a rapid decline in the water levels.

Fortunately, southeastern states realize the danger implicit in allowing the quality of their state groundwater to decline. Consequently, these states are in the process of implementing groundwater protection programs focused on protecting and preserving groundwater quality. Many of the states are using groundwater quality standards, use classifications, and monitoring requirements to protect groundwater sources. In addition, potential pollutant sources are permitted or regulated in all states. Regulated facilities include landfills, industrial and domestic wastewater facilities, and onsite domestic waste disposal. Non-point pollution sources are being addressed through non-regulatory programs in southeastern states, most commonly in the form of best management practices.

Given the importance of high quality groundwater sources to the future development of the states, it is imperative that the issue of support for pollution prevention and protection programs to maintain groundwater resources be addressed. High quality groundwater must be available to replenish surface waters, support ecological needs, and continue as a drinking water source for the region’s growing population. Ground and surface water quality standards must be designed to address the interactions between the two resources. As the states in the Southeast move into the future, these important issues must be confronted.

Table 2. Comparison of Groundwater Quality Laws and Regulations

	Alabama[1]	Florida[2]	Georgia[3]	Kentucky[4]	Mississippi[5]	North Carolina[6]	South Carolina[7]	Tennessee[8]
Policy								
Beneficial use	X	X	X	X	X		X	
Conservation exercised/encouraged	X	X		X	X	X		
Protect/improve water quality	X	X	X	X	X	X	X	X
No discharge without treatment		X	X		X			
Unlawful to cause pollution				X			X	X
Other	X						X	X
Responsibility								
State agency	Y	Y	Y	Y	Y	Y	Y	Y
Water Quality Standards								
Designated uses		X	X			X	X	X
Type of standard								
Numeric		X	X			X	X	X
Narrative		X	X			X	X	X
Anti-degradation policy for groundwater specified	N	N	N	Y	N	N	Y	N
Non-point source pollution								
Regulatory program			X				X	
Non-regulatory program	X	X	X	X	X	X	X	X

1 Ala. Code Ann. §§ 22-22- 1 et seq. (Michie 2001) and ADEM Admin. Code R. 355-6 (2004).

2 F.S. §403.011 et seq. (2004)), and Chapter 62-40.110, F.A.C (2003); Chapter 62-302, F.A.C. (2003); Chapter 63-43, F.A.C. (2003); Chapter 62-611, F.A.C. (2003).

3 O.C.G.A. §§ 12-5-20 et seq. (Lexis 2001) and DNR Rules 391-3-6 (2004).

4 Ky Rev. Stat. §§ 224.70 et seq. (Michie 2001) and 401 K.A.R. 5:0500 (2004).

5 Miss. Code Ann. §§ 49-17 et seq. (West 1999), and M.R. WPC-1 (2001).

6 N.C. Gen. Stat. Ann. §§ 143-200 et seq. (Lexis 2003), and N.C.A.C. 15A, 02H (2004).

7 S.C. Code Ann. §§ 49-1 et seq. (Lexis 2003), and S.C.R 61-68 (2002).

8 T.C.A. §69-3-101 et seq. (2001)) and TDEC Rule 1200-4 (2004).

Table 3. Comparison of Groundwater Quality Permitting Laws and Regulations

	Alabama	Florida	Georgia	Kentucky	Mississippi	North Carolina	South Carolina	Tennessee
Permit type								
NPDES								
Individual	X		X					
General	X		X					X
State operating					X		X	
Underground Injection Control	X	X	X		X		X	X
General permit		X						
Other			X[1]	X[2]		X[3]	X[4]	X[5]
Exemptions								
Domestic	X	X				X	X	
Agriculture	X						X	
Commercial	X	X						
Other	X	X						
Decision maker								
Individual	X	X	X	X		X		
Board/commission					X		X	X
Criteria								
Engineering/technical	X	X	X	X	X	X		
Performance history		X	X		X			
Financial stability					X			
Buffers requirement	Y	N	Y	N	Y	Y	Y	Y
Bond requirement	N	Y	Y	N	Y	N	N	Y
Permit duration	5yrs	5yrs	5yrs	5yrs	5yrs	5yrs	5yrs	5yrs
Unauthorized discharge reporting required	X	X	X	X	X	X	X	X
Fees								
Application	X	X	X	X		X	X	X
Annual		X				X	X	X
Transfers/revocation/modification authorized	Y	Y	Y	Y	Y	Y	Y	Y
Public hearing provisions specified	Y	Y	Y	Y	Y	Y	Y	Y
Penalties								
Civil/administrative	X	X	X	X	X	X	X	X
Criminal	X	X	X	X		X	X	X
Appeal process specified	Y	N	Y	Y	Y	Y	Y	Y

1 Standards for wells (O.C.G.A. §12-5-124) (2001)

2 No Discharge Operation Permit (K.S.R. §224.10-100, K.S.R. §224-70-100) (2004)

Groundwater Protection Plans (KSR §224.01-010, KSR §224.10-100, §KSR 224.70-100)(2004)

3 Non-discharge Permits (N.C.A.C. 15A, 02H.0202) (2004)

Well Construction Permits (N.C.A.C. 15A, 02H.0202) (2004)

Groundwater Remediation Systems (N.C.A.C. 15A, 02H.0112) (2004)

4 Land Application System/State Permit (S.C.R. 61.9.505.1(b))

5 Septic System Construction Permit (T.R. 1200-1-6) (2004); (T.C.A. §68-221-401 et seq.) (2001)

Table 4. Comparison of State On-Site Sewage Management Laws and Regulations

	Alabama	Florida	Georgia	Kentucky	Mississippi	North Carolina	South Carolina	Tennessee
Inspection requirements								
Pre-sale inspections		X						
Periodic performance inspections		X	X[1]			X		
Inspection of repair work	X	X	X	X			X	X
Inspection of new construction	X				X[2]		X	X
Permit requirements								
New construction	X	X	X	X	X	X	X	X
Repair of existing systems	X	X	X		X	X		
System upgrade or modification	X	X	X	X		X	X	X
Filter requirements	Y	Y	Y	Y	N	Y	N	N
Homeowner assistance available								
Funding program to replace or repair failing systems	N	N	N	Y	N	Y	N	N
Drainfield areas/size reductions allowed	Y	Y	Y	Y	N	Y	N	Y
Minimum lot size requirements	Y	Y	Y	N	N	N	N	N
Methods to limit use of septic tanks								
Concurrency/adequate public facilities requirement		X			X			
Local ordinances that permit use of septic tanks		X			X			
Moratoriums on use of septic tanks authorized	X					X		

[1] Only required for systems with operating permits
[2] Property owners may request the Mississippi Department of Health to provide a final inspection after installation of a system.

Table 5. Comparison of State Well Driller Licensing Laws and Regulations

	Alabama[1]	Florida[2]	Georgia[3]	Kentucky[4]	Mississippi[5]	North Carolina[6]	South Carolina[7]	Tennessee[8]
License type								
License	X	X	X		X		X	X
Certification				X		X		
Exemptions	N	Y	Y	Y	Y	N	Y	N
Minimum licensing requirements stated	Y	Y	Y	Y	Y	Y	Y	Y
Examination required	Y	Y	Y	Y	Y	Y	Y	Y
Fees required	Y	Y	Y	Y	Y	Y	Y	Y
Renewal period (in years)	1	2	2	1	1	1	2	1
Penalty	Y	Y	Y	Y	Y	Y	Y	Y
Appeal process specified	Y	N	Y	Y	Y	Y	Y	Y

[1] Ala. Code Ann. §40-12-84 (Michie 2001).
[2] Chapter 62-531, F.A.C. (2003).
[3] O.C.G.A. §§12-5-120 *et seq.* (Lexis 2001)
[4] Ky Rev. Stat. §223.400 (Michie 2001).
[5] Miss. Code Ann. §51-5-1 (West 1999).
[6] N.C.A.C. 15A, 27.0100-.0900 (2004).
[7] S.C. Code Ann. §§40-23-5 *et seq.* (Lexis 2003).
[8] TDEC Rule 1200-4-9.01(2004).

Table 6. Comparison of State Well Standards Laws and Regulations

	Alabama	Florida	Georgia	Kentucky	Mississippi	North Carolina	South Carolina	Tennessee
Type of permit								
Construction	Y[1]	Y	Y[2]	N	Y	Y	Y	Y[3]
Repair		Y		N				
Construction standards								
Casing	Y	Y	Y	Y	Y	Y	Y	Y
Grouting requirements	Y	Y	Y	Y	Y	Y	Y	Y
Grout composition	Y	N	Y	Y	Y	N	Y	Y
Well reports								
Drillers log				X	X			
Cores required to be submitted	X[4]							
Well completion report	X	X	X	X	X		X	X
Well abandonment report				X	X	X	X	X
Pump installation requirements	N	N	Y	N	Y	Y	Y	Y
Abandonment								
Procedures specified	Y	Y	Y	Y	Y	Y	Y	Y
Applicability								
Public wells	Y	Y	Y	Y	Y	Y	N	Y
Private wells	Y	Y	Y	Y	Y	Y	Y	Y

[1] Drillers must file a "Notice of Intent to Drill" before well construction begins. (ADEM Admin. Code R. 355-9-1.03(b)(i)) (2004).
[2] Drillers must file a "Notice of Intent to Drill" before well construction begins. (OCGA 12-5-134(1)(A)(i) (Lexis 2001).
[3] Drillers must file a "Notice of Intent to Drill" before well construction begins. (TDEC Rule 1200-4-9-.01(1)(c)) (2004).
[4] Only required upon request of the Geological Survey of Alabama. (ADEM Admin. Code R. 335-9-1-.03(b)(3) (2004).

ANALYSIS OF STATE GROUNDWATER QUALITY STATUTES AND REGULATIONS

ALABAMA

The Alabama Department of Environmental Management implements the state's water quality law. The Alabama Water Pollution Control Act contains a comprehensive policy statement and broadly defines waters of the state to include rivers, streams, watercourses, ponds, lakes, coastal, ground and surface waters. The state uses a non-regulatory program to control non-point source pollution. State regulations do not specify quality standards or use classifications for groundwater. Alabama relies on Underground Injection Control permits to control pollution discharges into groundwater. While performance history may be grounds for denial of a discharge permit, the state has no bond requirement ensuring the financial responsibility of the discharging facility. Except in the case of animal feeding operations, the state relies on best management practices for erosion and sedimentation control to implement riparian buffers.

General policy:

Policy statement: Water quality is governed by the Alabama Water Pollution Control Act (A.C. §22-22-1 *et seq*. (1975)) and its accompanying regulations. The Act contains a statement of purpose stating that the public policy of the state is to:

- conserve the waters of the state;
- protect, maintain and improve the quality of public water supplies; and
- provide for the prevention, abatement and control of new or existing water pollution.

(A.C. §22-22-2)

Responsible agency: The Alabama Department of Environmental Management (ADEM) has jurisdiction over water pollution permitting in the state. (A.C. §22-22-9)

Type of water quality standards employed: Alabama regulations do not specify water quality standards for groundwater.

Non-point source pollution: Alabama's non-point source program uses a voluntary approach to address non-point source pollution which includes best management practices, education and outreach, technology transfer, monitoring and assessment and resource assistance using a balanced statewide and watershed focused restoration approach. (http://www.adem.state.al.us)

Permit types:

NPDES: National Pollutant Discharge Elimination System (NPDES) permits are issued to any person who discharges pollutants into groundwaters of the state. (A.A.C. 335-6-6-.03(1)) (A.A.C. 335-6-6-.02) NPDES permits are also required for operation of noncoal mining sites (defined as an area, on or beneath land, less than five total unreclaimed acres in size). (A.A.C. 335-6-12-.02(k))

Exemptions: Exemptions to the permit requirement include discharge of a permitted injection well. (A.A.C. 335-6-6-.03(1))

Underground injection control permits: UIC permits are required for the following activities:

- the discharge of fluids and/or pollutants to groundwater and/or to soil;
- the injection into any injection well or the construction of any facility to be used for the injection into any injection well;
- the construction, operation, maintenance, conversion, plugging, abandonment, or conducting any other injection activity in a manner that allows the movement of fluids and/or pollutants into an underground source of drinking water, if the pollutants may cause an exceedance of any primary or secondary drinking water regulation;
- well injection between the outermost casing and the borehole; and
- construction or operation of a Class I well, Class IV well, cesspool, motor vehicle waste disposal well, or Class III well lacking mechanical integrity.

(A.A.C. 335-6-8-.05(1))

Exemptions: The following well injection operations are not subject to permit requirements:

- single family sanitary waste disposal systems;
- facilities injecting natural gas for purposes of storage;
- Class II wells (defined as wells used to inject brine or other fluids which are brought to the surface in connection with oil or natural gas production; wells used for enhanced recovery of oil or natural gas; or wells used for storage of hydrocarbons). (A.A.C. 335-6-8-.02(m))
- Class V wells for disposal of laundromat, seafood processing, and meat processing (not slaughter house) wastewaters, if permitted by the Alabama Department of Public Health;
- any dug hole which is not used for injection; and
- dug, drilled, or driven shafts used to extract oil, gas, or groundwater.

(A.A.C. 335-6-8-.04)

Generic UIC Permits: These permits for well injection may be issued to owners or operators of Class V wells with the same or similar facilities and activities that generate similar fluids and/or pollutants, when the injection is more appropriately controlled by this type of permit. (A.A.C. 335-6-8-.02(cc))

Decision maker: The Director of the ADEM makes a written determination on the request for an NPDES permit and forwards the determination to the USEPA. If the agency does not modify the director's decision within sixty days of receiving the written determination, that decision becomes final. If the USEPA modifies the director's decision, the USEPA's decision is final. (A.A.C. 335-6-5-.06(2)(e)(f)(g)) The ADEM makes final decisions on UIC permits.
(A.A.C. 335-6-8-.07(i))

Criteria for issuance: An NPDES permit may be denied, if the applicant operates other permitted facilities within the state which are in substantial noncompliance, until such noncompliance is corrected. (A.A.C. 335-6-6-.19(2))

Buffer required: Animal feeding operations (AFO) must conform to buffer requirements listed in A.A.C. 335-6-7-.20 as necessary to protect surface and groundwater quality. Regulations listing buffer distances from occupied dwellings, churches, schools, hospitals, parks or property lines do not apply if any of the following conditions apply:

- the facility owner/operator owns the adjoining property;
- the adjoining property owner consents to a buffer exemption in writing through a dated, notarized document;
- the adjoining property contains a deed restriction notifying the owner of nearby AFOs; or
- the area is specifically zoned for AFO/CAFOs.

In addition, best management practices for stormwater management systems recommend the use of vegetated buffers to prevent stormwater runoff from contaminating groundwater. (See the *Alabama Handbook for Erosion Control Sediment Control and Stormwater Management on Construction Sites and Urban Areas: Developing Plans and Designing Best Management Practices* at http://www.swcc.state.al.su/pdf)

Bond required: Alabama does not have a bond requirement.

Permit duration: Permits have a fixed term not to exceed five years. (A.A.C. 335-6-5-.10(1)) (A.A.C. 335-6-6-.05(1))

Unauthorized discharge reporting requirements: Dischargers must notify the publicly owned treatment works, the ADEM, and the USEPA Region 4 of any discharge of a substance listed under Section 3001 of RCRA. (A.A.C. 335-6-5-.05(7)) All other permittees must make a report to the ADEM within 24 hours of becoming aware that an unauthorized discharge has occurred. (A.A.C. 335-6-8-.06) (A.A.C. 335-6-6-.12(l)(6))

Fees: Any person applying to the ADEM for issuance, reissuance, or modification of a permit must pay an application fee, as specified in Rule 335-1-6. (A.A.C. 335-1-6-.01) However, this section does not apply to:

- applications for the issuance, reissuance or modification of permits for Class V wells provided that no pollutants other than heat are injected and the heating or cooling units serve only a single family dwelling; or
- applications for a permit modification to correct clerical, typographical or calculation errors. (A.A.C. 335-1-6-.03(a)(b))

Transfers/modifications/revocations authorized: Transfer of State Indirect Discharge (SID) and NPDES permits are only allowed following modification and reissuance of the permit. (A.A.C. 335-6-5-.19(a)) (A.A.C. 335-6-6-.17) Subject to the appeal rights of the permittee, the ADEM may modify, or revoke and reissue any SID or NPDES permit during its term for cause. (A.A.C. 335-6-5-.19(b)) (A.A.C. 335-6-6-.17)

Public notice/hearing requirements: Under the NPDES permit regulations, public hearings may be held whenever it is found, on the basis of hearing requests, that there exists a significant degree of public interest in a permit application or a draft permit. The ADEM may also hold a

public hearing at its discretion, whenever such hearing might clarify one or more issues involved in the permit decision. (A.A.C. 335-6-6-.21(6)(a)(b))

On-site Sewage Disposal Systems

Permit requirements: No person may begin installing or constructing new on-site sewage disposal systems without a valid permit issued by the local health department. (A.A.C. 420-3-1-.15)(1)) Before repairs to an existing on-site sewage disposal system may be undertaken, the person requesting or engaged in the repairing of the system must possess a valid repair permit issued by the local health department. (A.A.C. 420-3-1-.34(1))

Inspection requirements: No part of any new installation may be covered with earth or used until the local health department is afforded an opportunity to inspect the site, corrections are made, if necessary, and use is authorized by the local health department. (A.A.C. 420-3-1-.20(1)(a)) After repairs to an on-site sewage disposal system have been completed, the repaired portion of that system may not be covered without authorization by the local health department. (A.A.C. 420-3-1-.34(3))

Filter requirements: Effluent filters must be installed in or with septic tanks and must also be properly maintained. (A.A.C. 420-3-1-.14(c)(11))

Allowance for drainfield areas/size reductions: Alabama allows for drainfield area/size reductions, based on the use of alternative media and pretreatment technologies. (National Small Flows Clearinghouse Regulations Database: http://www.nesc.wvu.edu/nsfc/pdf/summaries/ALABAMA.PDF)

Minimum lot size requirements: For single family dwellings, the lot size must be large enough to construct the original on-site sewage disposal system and to provide an area for duplication of that system. When an approved public water supply is proposed as the source of water for a lot, the minimum lot size is 15,000 square feet of land area per dwelling unit. When an individual well is located or proposed on a lot, the minimum lot size is 20,000 square feet of land area per dwelling unit. However, the size, topography and other characteristics of the lot may limit the location of the structure that can be built on the lot. (A.A.C. 420-3-1-.14(1))

Methods to limit use of septic tanks: Counties may impose moratoria on the construction of new septic tanks based on the Board of Health's recommendations. (*Mobile County Board of Health v. McNeill*, 350 So. 2d 303 (1977))

Driller Licensing Requirements

License requirements: Every person who proposes to drill a water well in Alabama must file an application with the Director of the ADEM for a water well driller's license. (A.A.C. 335-9-1-.03(a)(1))

Exemptions: None found.

Minimum licensing requirements: Any driller applying for a license must provide acceptable proof that he or she has at least two years of water well construction experience. (A.A.C. 335-9-1-.03(c)(1))

Examination required: Any driller applying for a license must make a minimum score of 70 percent on an authorized examination prior to being licensed. (A.A.C. 335-9-1-.03(c)(1))

Fees required: Alabama requires an annual payment fee of $200. (A.A.C. 335-9-1-.03(a)(1))

Renewal period: Annual (A.C. §22-24-5)

Penalty: A license may be refused, suspended, or revoked, after notice and hearing, if it is found that the applicant or holder of a license:

- is unable to present evidence of his or her qualifications suitable to the Director of the ADEM;
- has intentionally made a material misstatement in the application for such license;
- has willfully violated any provision of this chapter;
- has obtained, or attempted to obtain, such license by fraud or misrepresentation;
- has been guilty of fraudulent or dishonest practices; or
- has demonstrated lack of competence as a driller of water wells. (A.C. §22-24-7(a))

Appeal process: Any person aggrieved by an administrative action of the ADEM shall be entitled to a hearing before the Environmental Management Commission or its designated hearing officer. (A.A.C.335-2-1-.03)

Water Well Standards

Well/Water well definition: “Well” means a hole drilled for the production of water. (A.A.C. 335-9-1-.02(h))

Permit type:

Construction: Every person desiring to drill a water well must file a Notification of Intent to drill a well prior to the commencement of work. (A.A.C. 335-9-1-.03(b)(1))

Construction standards

Casing requirements: In every well, the casing must extend from one foot above ground level to a suitable impervious layer where it must be property sealed to prevent the entrance of seep water and other extraneous material. In no case may the length of casing be less than 20 feet. Where an impervious layer is not encountered above the water-bearing zone, the seal must be affected by sealing 50 feet of the annulus, the upper 20 feet of which must be grouted. All wells with casing greater than eight inches in inside diameter must be grouted to a depth of 20 feet or more. Wells that are to be constructed with less than 20 feet of casing must be approved by the county environmentalist. (A.A.C. 335-9-1-.06(a)(1))

Grouting requirements: Well casings used in the construction of community and non-transient, non-community water supply wells must be pressure cement grouted. The grout must be added at the bottom of the outer casing under pressure and flow in a continuous operation until the annular opening is filled and overflowing. Wells must be grouted from the immediate vicinity of the uppermost formation to land surface unless otherwise approved by the ADEM. A sufficient annular space must be available to provide a minimum of two inches of grout around the entire length of protective casing to protect the water bearing aquifer from surface water contamination and undesirable water in upper formations. Casing to be grouted in the drill hole or annular opening must be provided with sufficient guides to permit unobstructed flow. Wells for non-community water systems may be grouted as previously described or by a tremie pipe method. Grout must be introduced at the bottom of the zone to be grouted, and the material continuously introduced. Minimum annular space must be three inches. In wells greater than 100 feet, the length of grout seal must not be less than 100 feet as measured from the land surface to the end of the grout zone. (A.A.C. 335-7-5-.13)

Grouting composition: A ratio of one sack of Portland cement to six gallons of water must be used for private wells. (Water Systems Council: State Well Codes: Alabama; www.watersystemscouncil.org/wellcodes/index.cfm)

Well reports

Well completion report: Every person who drills a well must file a Certification of Completion within 30 days after completion of work. (A.A.C. 335-9-1-.03(b)(2))

Cores submission requirement: When requested by the Geological Survey of Alabama, the driller must collect samples in compliance with Alabama Code §22-24-8(5)(84). (A.A.C. 335-9-1-.03(b)(3))

Pump installation requirements: None found.

Abandonment requirements: Any well to be abandoned must be permanently sealed in the following manner: the well will be filled with a puddle clay material containing 50 ppm of chlorine to within 20 feet of the tope of the well. The top 20 feet must be filled with cement grout or concrete. (A.A.C. 335-9-1-.06(g))

Penalties

Civil: The ADEM, the Attorney General or any district attorney may commence a civil action for damages including any reasonable costs to prevent, minimize, or clean up any damage resulting from pollution resulting from the wrongful act, omission or negligence of a person. Civil actions may be filed in the county or counties where pollution occurs or in which the defendant resides or does business. Punitive and compensatory damages may be recovered where pollution resulted from willful or wanton conduct on the part of the defendant; compensatory damages alone may be awarded when the pollution is caused by a

negligent act or omission. (A.C. §22-22-9(m)) An action for injunctive relief is also available. (A.A.C. 335-6-6-.18(2)(c))

Criminal: Any person who willfully or with gross negligence violates any provision of the Act, or rule promulgated there under, is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation or by imprisonment for not more than one year, or both. After a first conviction, punishment shall be by a fine of not less than $5,000 nor more than $50,000 per day of violation or by imprisonment for not less than one year and one day nor more than two years, or both. Any person who knowingly makes false statements or falsifies any monitoring device required to be maintained by this chapter shall be punished by a fine of not more than $10,000 or by imprisonment for not more than six months, or both.
(A.C. §22-22-14)

State Case Law

Nuisance

- *Henderson v. Wade Sand & Gravel Company*, 388 So. 2d 900 (Ala. 1980): In this case, the defendant pumped groundwater from underneath plaintiff's land to such an extent that sinkholes opened up and ultimately caused plaintiff's house to sink and break apart. This ruling changed the controlling legal theory in land subsidence cases from a traditional negligence theory to a nuisance theory in the context of property damage caused by a continuing activity involving the use of underground water.

Unconstitutional Takings

- *Avery v. Marengo County Commission*, 646 So. 2d 1347 (Ala. 1994): Plaintiffs claim that the extension of municipal water lines into the area served by their privately owned water company under a state certificate of convenience and necessity resulted in loss of business to that company and therefore constituted inverse condemnation. The Court disagreed saying defendants had not acquired any of the plaintiffs' real property or property interests as the groundwater at issue constantly recharges so that their water supply will not be depleted.

FLORIDA

The Florida Department of Environmental Protection is responsible for protecting the quality of Florida's groundwater. The Department has specified use classifications and numeric and narrative groundwater quality standards. The Department also issues pollution discharge permits. Florida uses General and Underground Injection Control permits to protect the quality of the state's groundwater. The Department requires proof of financial responsibility, such as posting of a bond, before a discharge permit will be issued. The Department of Environmental Protection's permitting duties are funded by annual surveillance and permit application fees.

General policy:

Policy statement: Water quality in Florida is governed by the Florida Air and Water Pollution Control Act (F.S. §403.011 *et seq*. (2004)). It is the policy of the State of Florida to conserve the waters of the state and to protect, maintain, and improve water quality for public water supplies, for the propagation of wildlife and fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses, and to provide that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water. (F.S. §403.021 (1)(2))

Responsible agency: The Florida Department of Environmental Protection (FDEP) has jurisdiction over water pollution control permitting in the state. (F.S. §403.061)

Type of water quality standards employed: Groundwater use classifications, narrative, and numeric standards are contained in F.A.C. 62-520 (2003).

Non-point source pollution: In 1987, the Florida Legislature created the Surface Water Improvement and Management program (SWIM) to address non-point water pollution sources. SWIM addresses a waterbody's needs as a system of connected resources. To accomplish this, SWIM meshes across governmental responsibilities, forging partnerships in water resource management. While the state's five water management districts and the FDEP are directly responsible for the SWIM program, they work with federal, state, and local governments and the private sector. SWIM develops plans for at-risk water bodies, and directs the work needed to restore damaged ecosystems, prevent pollution from runoff and other sources, and educate the public.
(http://www.dep.state.fl.us/water/watersheds/swim.htm)

Permit types

Groundwater discharge permit: Unless exempted by Rule 62-520.500, 62-520.510, or 62-520.520, F.A.C., no installation shall directly or indirectly discharge into groundwater any contaminant that causes a violation in the water quality standards and criteria for the receiving ground water as established in Chapter 62-520, F.A.C., except within a zone of discharge established by permit or rule pursuant to this chapter. (F.A.C. 62-522.300) Unless otherwise exempted by the FDEP, any installation discharging into groundwater shall establish a monitoring program meeting quality assurance requirements. (F.A.C. 62-522.600)

Underground injection control permits: The purpose of the UIC program is to protect the quality of the state's underground sources of drinking water and to prevent degradation of the quality of other aquifers adjacent to the injection zone that may be used for other purposes. This purpose is achieved through rules that govern the construction and operation of injection wells in such a way that the injected fluid remains in the injection zone, and that unapproved interchange of water between aquifers is prohibited. (F.A.C. 62-528.100(1)) The following wells are included among those types of injection activities that are covered by this program:

- any injection well other than a Class II well located on a drilling platform inside Florida's territorial waters;
- any dug hole or well that is deeper than its largest surface dimension, where a principal function of the hole is emplacement of fluids;
- any well used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste. This includes the disposal of hazardous waste into what would otherwise be septic systems and cesspools, regardless of their capacity; and
- any septic tank, cesspool, or other well used by a multiple dwelling, community, or regional system for the injection of wastes. (F.A.C. 62-528.120(3))

Exemptions: The following wells and systems are not covered by the program:

- injection wells located on a drilling platform or other site that is beyond Florida's territorial waters;
- any individual or single family domestic waste residential septic system or non-residential septic system receiving only domestic wastewater which has the capacity to serve fewer than 20 persons per day;
- any dug hole, drilled hole, or bored shaft that is not used for the subsurface emplacement of fluids; and
- any well used in conjunction with the operation of an earth-coupled heat pump system. (F.A.C. 62-528.120(4))

Stormwater permits: Stormwater discharges to groundwater are regulated under F.A.C. 62-28.700.

Decision maker: All permits are issued by the FDEP. (F.A.C. 62-4.070(1))

Criteria for issuance: A permit shall be issued to the applicant only if he or she affirmatively provides the FDEP with reasonable assurance that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of the FDEP rules. In addition, the FDEP shall take into consideration a permit applicant's violation of any department rules at any installation when determining whether the applicant has provided reasonable assurances that the FDEP standards will be met.
(F.A.C. 62-4.070(1)(5))

Buffer required**:** There are no buffer requirements to protect groundwater quality in Florida.

Bond required: The FDEP may require a permit applicant to submit proof of financial responsibility to guarantee compliance. Proof of financial responsibility, such as posting an appropriate bond, shall be required only if the applicant's compliance record or financial inability to comply with permit conditions results in a lack of reasonable assurance that all applicable FDEP standards will be met. (F.A.C. 62-620.301(1)(6))

Permit duration: Permits have a fixed term not to exceed five years. (F.A.C. 62-4070(4))
(F.A.C. 62-620.320(8))

Unauthorized discharge reporting requirements: Reports of noncompliance with requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. In addition, notification of any noncompliance which may endanger health or the environment shall be reported verbally to the FDEP within 24 hours and again with 72 hours, and a final written report provided within two weeks. (FAC 62-4.160(16)(b)(c)) All permits issued by the FDEP must include the condition that if, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in a permit, the permittee shall immediately provide the FDEP with the following information:

- a description of and cause of noncompliance; and
- the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

(F.A.C. 62-4.160(8)(a)(b))

Fees: Any person applying to the FDEP for issuance, reissuance, or modification of a permit must pay an application fee. In addition, annual regulatory and surveillance fees for wastewater and stormwater permits are required. These fees implement the legislative intent that the FDEP's costs for administering the NPDES be borne by regulated parties.

Transfers/modifications/revocations authorized: For good cause and after notice and an administrative hearing, if requested, the FDEP may require the permittee to conform to new or additional conditions. (F.A.C. 62-4.080(1)) Transfers of permits are allowed if, within 30 days after the sale or legal transfer of a permitted facility, an application for a permit transfer is submitted to the FDEP. Transfers shall be approved, unless the FDEP determines that the proposed new permittee cannot provide reasonable assurances that conditions of the permit will be met. (F.A.C. 62-4.120(1)(2)) Failure to comply with pollution control laws and rules is grounds for suspension or revocation. (F.A.C. 62-4.100(2))

Public notice/hearing requirements: The FDEP shall hold a public meeting after public notice whenever a significant degree of public interest in a draft permit is expressed through public comments and requests for a public meeting. The FDEP may also hold a public meeting whenever it might clarify one or more issues involved in the permit decision.
(F.A.C. 62-620.555(4))

On-site Sewage Disposal Systems

Permit requirements: No portion of an on-site sewage disposal system may be installed, repaired, altered, modified, abandoned or replaced until an "On-site Sewage Treatment and Disposal System Construction Permit" has been issued by the Florida Department of Health. (F.A.C. 64E-6.003(1))

Inspection requirements

Pre-sale inspections: Florida has established a pre-sale inspection protocol for on-site sewage disposal systems during property transfers. The inspection assesses the condition of a system at a particular moment in time. The inspection identifies obviously substandard systems, but is not designed to determine precise code compliance. (F.A.C. 64E-6.001(5))

Periodic performance inspections: Regular inspections are required by the state only for systems with operating permits. Systems which are required to have an annual operating permit and the structures which they serve must be inspected by the local health department at least once during the term of the permit to determine compliance with the terms of the operating permit. (F.A.C. 64E-6.003(2)(e))

Inspection of repair work: Before covering with earth and before placing a system into service, a person installing or constructing any portion of an on-site sewage disposal system must notify the county health department of the completion of the construction activities and must have the system inspected by the department for compliance with the requirements of the Florida Code. (F.A.C. 64E-6.003(2)) A system repair must be inspected by the local health department or a master septic tank contractor to determine compliance with construction permit standards prior to the final covering of the system. (F.A.C. 64E-6.003(3))

Filter requirements: Septic tank effluent filters are required by the state for on-site sewage disposal systems. (F.A.C. 64E-6.001(4)(a)(1))

Allowance for drainfield areas/size reductions: Drainfield area/size reductions are allowed by Florida law, based on level of treatment of effluent. (F.S. §381.0065(4)(s)(t)(1)) (F.A.C. 64E-6.014)

Minimum lot size requirements: The minimum lot size allowed for the placement and use of an on-site system is one-half acre for private wells and four lots per acre for public wells. (F.S. §381.0065(4)(a)(b))

Methods to limit use of septic tanks:

Concurrency/adequate public facilities requirement: The Florida Legislature has mandated that public facilities and services needed to support development must be available concurrently with the impacts of such development. In meeting this

requirement, public facilities and service availability will be deemed sufficient if the public facilities and services for a development are phased, or the development is phased, so that the public facilities and those related services which are deemed necessary by local government to operate the facilities necessitated by that development are available concurrent with the impacts of the development. The public facilities and services, unless already available, are to be consistent with the capital improvements element of the local comprehensive plan or guaranteed in an enforceable development agreement.
(F.S. §163.3177(h))

Methods to limit the use of septic tanks: Counties and municipalities may bring judicial actions for injunctive relief against any person or developer found to be in violation of any rules, regulations, or orders issued under the Florida Statutes. (F.S. §380.11(1)(a)) (*Killearn Properties, Inc. v. Department of Community Affairs*, 623 So. 2d 771 (Fla. App. 1993))

Driller Licensing Requirements

License: It is illegal for any person to practice water well contracting without an active license in Florida. (F.A.C. 62-531.450(2)(a))

Exemptions: A water well contractor license is not required for a person to construct a well that meets all of the following criteria:

- the well must be two inches or less in diameter;
- the well must be constructed on his or her own land or leased property; and
- the well is intended for use only in a single family house which is his or her residence or is intended for use only for farming purposes on his or her farm, and the waters to be produced are not intended for use by the public or any residence other than his own. (F.A.C. 62-531.390(1))

Minimum licensing requirements: The water management districts must accept applications for licensing as a water well contractor from any person who is at least 18 years of age, has knowledge of those rules adopted by the FDEP and the district which deal with the regulation of water wells, has had not less than two years experience in constructing, repairing, or abandoning wells, and has taken and completed a minimum of 12 approved coursework hours. (F.A.C. 62-531.300(1))

Examination required: A license must not be issued until the applicant successfully passes the required examination. A grade on the examination of 70 percent or more shall be passing. (F.A.C. 62-531.300(4))

Fees required: New licenses must be accompanied by a fee of $150. A $50 renewal fee is also required. (F.A.C. 62-531.340(1)(a)(b))

Renewal period: Biennial. (F.A.C. 62-531.330(1))

Penalty: When a water management district finds a person guilty on any grounds for disciplinary action, it may:

- deny an application for licensure or renewal of a license;
- revoke or suspend a license;
- impose an administrative penalty not to exceed $1,000 for each county or separate offense
- assess points against a water well contractor's license;
- place the water well contractor on probation for a minimum of six months subject to the conditions specified in an order of the District; or
- restrict the licensee's authorized scope of practice. (F.A.C. 62-531.450(5))

Appeal process: None found

Water Well Standards

Well/Water well definition: "Water well" or "well" means any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, acquisition, development, or artificial recharge of groundwater. (F.A.C. 62-532.200(22))

Permit type:

Construction: A permit from a permitting authority (the FDEP, a water management district, or any political subdivision that has been delegated the authority to issue permits) is required before beginning construction of any water well. (F.A.C. 62-532.400(1))

Repair: A permit is required before repair of any water well.
(F.A.C. 62-532.400(1))

Construction standards

Casing requirements: The well casing must be new or in like-new condition. Such well casing must not be used unless, it is (1) free of breaks, corrosion and dents, (2) straight and true, and (3) not out of round. Welded or seamless black or galvanized steel casing, or stainless steel casing, or approved types of nonmetallic pipe must be used for well casing. All well casing must conform to one of the following standards: American Society for Testing and Materials A53/A53M-99b, A135-01, A252-98, A589-96, or American Petroleum Institute 5L-2000. Well casings that conform to any of these standards must also conform to the American National Standard for Welded and Seamless Wrought Steel Pipe. All well casings must be stenciled with the applicable standard, or proper documentation of manufacturer specifications must be supplied to the permitting authority upon request. (F.A.C. 62.532.500(1)(a))

Grouting requirements: One inch of neat cement must be used when the outer diameter is less than four inches. Two inches of neat cement grout are needed when the casing's

outer diameter is four inches or greater and the borehole diameter is greater than the outer casing diameter. (F.A.C. 62.532.500(f)(4))

Well reports

Well completion report: Within 30 days after completion of the construction or repair of any water well, a written report must be filed with the permitting authority on the appropriate forms. (F.A.C. 62-532.410)

Pump installation requirements: None found

Abandonment requirements:

Procedures: All abandoned wells must be plugged by filling them from bottom to top with neat cement grout or bentonite and caped with a minimum of one foot of neat cement grout. (Water Systems Council: State Well Codes: Florida; www.watersystemscouncil.org/wellcodes/index.cfm)

Penalties:

Civil: The FDEP may institute actions in a court of competent jurisdiction to establish liability and to recover damages for any injury to waters, animal, plant, and aquatic life, of the state caused by any violation in an amount of not more than $10,000 per offense. Each day during any portion of which such violation occurs constitutes a separate offense. (F.S. §403.121(1)(a)(b))

Administrative: The FDEP may institute an administrative proceeding to establish liability and to recover damages for any injury to the waters of the state caused by any violation. The FDEP may institute an administrative proceeding to order the prevention, abatement, or control of the conditions creating the violation. Except for violations involving underground injection, the FDEP shall proceed administratively in all cases in which the department seeks administrative penalties that do not exceed $10,000 per assessment. If a respondent requests a formal hearing in response to a notice of violation, he or she may also request that a private mediator be appointed to mediate the dispute. (F.S. §403.121((2)(a)(b)(e))

State Case Law

Nuisance

- *Davey Compressor Company v. City of Delray Beach, et al.*, 613 So. 2d 60, (Fla. App. 1993): Appellant dumped highly toxic solvents used to clean air compressors directly onto the ground behind its facility. As a result, appellee discovered high levels of the toxic solvents in the groundwater beneath its well field. Appellee sued appellant, not for injury to its real property, but rather for injury to its right to the use of the groundwater beneath its real property. The case proceeded to jury trial on the common law claims of

negligence, nuisance, trespass and strict liability. The jury found appellant liable on all of the claims.

Negligence

- *Davey Compressor Company v. City of Delray Beach, et al.*, 613 So. 2d 60, (Fla. App. 1993): Appellant dumped highly toxic solvents used to clean air compressors directly onto the ground behind its facility. As a result, appellee discovered high levels of the toxic solvents in the groundwater beneath its well field. Appellee sued appellant, not for injury to its real property, but rather for injury to its right to the use of the groundwater beneath its real property. The case proceeded to jury trial on the common law claims of negligence, nuisance, trespass and strict liability. The jury found appellant liable on all of the claims

Strict Liability

- *Davey Compressor Company v. City of Delray Beach, et al.*, 613 So. 2d 60, (Fla. App. 1993): Appellant dumped highly toxic solvents used to clean air compressors directly onto the ground behind its facility. As a result, appellee discovered high levels of the toxic solvents in the groundwater beneath its well field. Appellee sued appellant, not for injury to its real property, but rather for injury to its right to the use of the groundwater beneath its real property. The case proceeded to jury trial on the common law claims of negligence, nuisance, trespass and strict liability. The jury found appellant liable on all of the claims

Trespass

- *Davey Compressor Company v. City of Delray Beach, et al.*, 613 So. 2d 60, (Fla. App. 1993): Appellant dumped highly toxic solvents used to clean air compressors directly onto the ground behind its facility. As a result, appellee discovered high levels of the toxic solvents in the groundwater beneath its well field. Appellee sued appellant, not for injury to its real property, but rather for injury to its right to the use of the groundwater beneath its real property. The case proceeded to jury trial on the common law claims of negligence, nuisance, trespass and strict liability. The jury found appellant liable on all of the claims

Unconstitutional Takings

- *The Village of Tequesta v. Jupiter Inlet Corp*., 371 So. 2d 663 (Fla. 1979): As a result of the plaintiff municipality drawing off an excessive amount of water from a shallow-water aquifer, the fresh-water supply for the city was endangered by saltwater intrusion into the aquifer. As a consequence, defendant developer could only supply water to its property by drilling a well to the Floridan aquifer at a substantially greater cost. The Court stated that in order to show a taking, defendant had to show that a private property right had been destroyed by a governmental action. However, defendant had no constitutionally protected right to the water beneath its property. Therefore, defendant was seeking to be

compensated for a use which it had never perfected to the point that it was in existence. Defendant had a right to use the water, but the use itself is not existent until this right is exercised. Therefore, defendant had perfected no legal interest to the use of the water beneath its land which would support an action in inverse condemnation.

GEORGIA

The Environmental Protection Division of the Department of Natural Resources implements Georgia's water pollution control programs. While Georgia does not have a very detailed policy statement concerning groundwater quality protection, the state does specify water quality standards for groundwater, as well as implement a regulatory non-point source pollution control program. The Georgia Water Quality Control Act also specifies extensive criteria for issuance of discharge permits. A performance bond requirement exists for underground injection control permittees. In addition, Georgia statutes contain detailed riparian buffer requirements for land-disturbing activities to protect groundwater quality in the state.

General policy:

Policy statement: Protection of water quality in Georgia is governed by the Georgia Water Quality Control Act (O.C.G.A. §12-5-20 *et seq*. (2001)). It is the policy of the State of Georgia that the waters of the state should be used prudently for the maximum benefit of the people, in order to restore and maintain a reasonable degree of purity in the state waters, and to require reasonable treatment of sewage, industrial wastes, and other wastes prior to their discharge into such waters. (O.C.G.A. §12-5-21(a))

Responsible agency: The Environmental Protection Division (GAEPD) of the Georgia Department of Natural Resources (DNR) enforces water quality standards in the state. (O.C.G.A. §21-5-21(b))

Type of water quality standards employed: The GAEPD establishes subsurface water quality standards for the state as a whole, as well as for any part of the state. The administrative rules contain narrative criteria that describe minimum conditions applicable to all state waters. (DNR Rule 391-3-6-.03(5)) Groundwater quality is protected by a set of standards that apply to all wells drilled in the state, including individual, public, and non-public wells.
(O.C.G.A. §12-5-134)

Non-point source pollution: Georgia requires any person who wants to build a facility that will discharge pollutants from a non-point source into the waters of the state to obtain a state discharge permit. (O.C.G.A. §12-5-30(b))

Permit types

NPDES permit: If an applicant proposes to discharge to a well or subsurface water, the GAEPD shall specify additional terms and conditions which shall (a) prohibit the proposed disposal, or (b) control the proposed disposal in order to prevent pollution of ground and surface water resources and to protect the public health and welfare.
(DNR Rules 391-3-6-.06(14))

Underground injection control permits: No person shall construct or operate a Class I, II, or III injection well without first obtaining and injection well permit from the GAEPD. The requirements for Class II wells do not include permits for exploration, drilling and well

construction or oil and/or gas production. (DNR Rules 391-3-6-.13(6)) Except for Class V septic systems that handle only sanitary wastes, no person shall construct or operate a Class V injection well for the injection of contaminants or fluids unless issued a permit by the GAEPD. (DNR Rule 391-3-6-.13(11))

Decision maker: The Director of the Georgia Environmental Protection Division issues permits. (O.C.G.A. §12-5-30(a) (b))

Criteria for issuance: If the GAEPD has reasonable cause to believe that an applicant for a permit who has less than three years of compliance history in Georgia is not in compliance with laws or permits, then the agency may require the applicant to submit a compliance history disclosure form. The form includes a statement to the effect that the applicant has been convicted of a felony or been adjudicated in contempt of court. The GAEPD may refuse to issue a permit to any applicant with or without three or more years of compliance, if it finds clear and convincing evidence that the applicant has:

- misrepresented a material fact in the application;
- has obtained another permit by misrepresentation or concealment;
- has pleaded guilty or been convicted by final judgment in Georgia of any felony involving moral turpitude within three years preceding the date of the application;
- has pleaded guilty or been convicted by final judgment in Georgia to a third or subsequent material violation of any environmental law that presented a substantial endangerment to human health within three years preceding the date of the application;
- has been adjudicated in contempt of any court order enforcing any environmental laws within three years preceding the application date;
- was the holder of any permit required for the discharge of pollutants which was revoked for reasons of noncompliance within three years preceding the application date; or
- was denied for reasons of noncompliance the issuance of any permit required for the discharge of pollutants within three years preceding the date of the application.

(O.C.G.A. §12-5-23(d)(e))

In addition, the GAEPD shall issue permits upon the condition that the discharge meets or will meet all applicable water quality standards and effluent limitations included in the permit's schedule of compliance. (O.C.G.A. §12-5-30(d))

Buffer required: Land disturbing activities require, as a minimum, protections at least as stringent as those of the state general permit and best management practices including a 25-foot buffer along the banks of all state waters, as measured horizontally from the point where vegetation has been wrested by normal stream flow unless a variance is granted. No land-disturbing activities shall be conducted within any such buffer and it shall remain in its natural, undisturbed state of vegetation until all land-disturbing activities on the construction site are completed. Once the final stabilization of the site is achieved, a buffer may be thinned or trimmed of vegetation as long as a protective vegetative cover remains to protect water quality. A 50-foot buffer is required along the banks of any state waters classified as "trout streams." (O.C.G.A. §12-7-6(15)(16))

Bond required: An underground injection control permittee must maintain financial responsibility and resources to close, plug and abandon the underground injection operation in a manner prescribed by the director of GAEPD. The permittee must show evidence of financial responsibility to the director by the submission of surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the director.
(DNR Rule 391-3-6-.13(8)(e)

Permit duration: Permits shall be issued for not longer than five years.
(DNR Rule 391-3-6-.06(15)(a))

Unauthorized discharge reporting requirements: Georgia regulations reference federal unauthorized discharge reporting requirements at 40 CFR 122.41.
(DNR Rules 391-3-6-.06(8))

Fees: Georgia only has a fee system designed to offset the costs of the state-wide implementation of the NPDES general permit or permits for stormwater runoff from construction activities. (O.C.G.A. §12-5-23(a)(5)(A))

Transfers/modifications/revocations authorized: The GAEPD may revoke, suspend, or modify any permit issued for cause including, but not limited to, the following:

- violation of any condition of the permit;
- obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; and
- change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. (O.C.G.A. §12-5-30(d))

A permit may be transferred to another person by a permittee if the permittee notifies the GAEPD of the proposed transfer and a written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittees is submitted to the GAEPD and the GAEPD does not notify the current and new permittees within 30 days of the GAEPD's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.
(DNR Rule 391-3-6-.06(15)(b))

Public notice/hearing requirements: The GAEPD shall provide an opportunity for an interested person or agency to request a public hearing with respect to an NPDES permit application. The GAEPD shall hold a hearing, if it determines that there is sufficient public interest in holding such a hearing. (DNR Rule 391-3-6-.06(7)(c)(1))

On-site Sewage Disposal Systems

Permit requirements: No person may begin the development of a lot or structure where an on-site sewage management system will be used, nor install an on-site sewage management system without having first applied for and obtained from the county health department a construction permit. Repairs, replacements or additions to existing on-site sewage management systems must also be permitted. (Department of Human Resources (DHR) Rule 290-5-26-.03(2))

Inspection requirements

Periodic performance inspections: Regular inspections are not required for investigating the performance and operation of on-site systems after initial construction, but such inspections are required for advanced treatment systems.
(National Small Flows Clearinghouse Regulations Database:
http://www.nesc.wvu.edu/nsfc/pdf/summaries/GEORGIA.PDF)

Inspection of repair work: Repairs, replacement, or additions to existing on-site sewage management systems must be inspected. (DHR Rule 290-5-.03(2)(c))

New construction: No person may backfill or use on on-site sewage management system until final inspection has been made by the county board of health to determine compliance with the provisions of the construction permit. (DHR Rule 290-5-26-.03(4))

Filter requirements: Property owners must use septic tank effluent filters for on-site sewage management systems. (DHR Rule 290-5-.05(1))

Allowance for drainfield areas/size reductions: Georgia regulations allow for drainfield area/size reductions, based on use of alternative media and advanced wastewater treatment, i.e., wastewater quality and/or effective infiltration area of the absorption field.
(DHR Rule 290-5-26-.07)

Minimum lot size requirements: Minimum lot size requirements for the placement and use of an on-site wastewater treatment system are under the jurisdiction of the county boards of health. The State recommends a minimum lot size of one-half acre on public water and one acre on individual well. (DHR Rule 290-5-26-.03(3)) (National Small Flows Clearinghouse Regulations Database: http://www.nesc.wvu.edu/nsfc/pdf/summaries/GEORGIA.PDF)

Methods to limit use of septic tanks: None

Driller Licensing Requirements

License requirements: Any person desiring to engage in the business of water well construction in Georgia must apply to the State Water Well Standards Advisory Council for a license as a water well contractor. (O.C.G.A. §12-5-127(a))

Exemptions: A license is not required for a person who constructs a well on that person's owned or leased property intended for use only in a single-family house which is the person's permanent residence or intended for use only for farming purposes on the person's farm, which well produces less than 25,000 gallons per day, so long as the waters to be produced are not intended for use by the public or in any residence other than his own.
(O.C.G.A. §12-5-127(f))

Minimum licensing requirements: An applicant for a license as a water well contractor must be required to have two years experience working in the water well construction business under a licensed water well contractor. (O.C.G.A. §12-5-127(b))

Examination required: An applicant for a license as a water well contractor must pass an examination. (O.C.G.A. §12-5-127(b))

Fees required: All license applications must be accompanied by a fee to be set by the State Water Well Standards Advisory Council. (O.C.G.A. §12-5-127(a))

Renewal period: Biennial. (O.C.G.A. §12-5-130)

Penalty: A drilling license may be revoked or suspended upon a finding of one or more of the following grounds:

- material misstatement in the application for license;
- willful disregard or violation of any Georgia law relating to wells;
- willfully aiding or abetting in the violation of any Georgia law relating to wells;
- incompetency in the performance of the work of a water well contractor;
- making substantial misrepresentations or false promises in connection with the occupation of a water well contractor;
- failure to provide and maintain on file at all times a performance bond or irrevocable letter of credit; and
- allowing an unlicensed driller to use or to work under such licensee's license in any way. (O.C.G.A. §12-5-129(a))

Appeal process: The operator of any drilling operation who has been ordered to cease operation is entitled to a hearing before the administrative law judge of the Department of Natural Resources within 48 hours. (O.C.G.A. §12-5-129(e))

Water Well Standards

Well/water well definition: "Water well" means any excavation which is cored, bored, drilled, jetted, dug, or otherwise constructed for the purpose of locating, testing, or withdrawing groundwater and which is intended or usable as a source of water supply for individual homes, farms, irrigation, industrial processes, public water systems, or nonpublic water systems. (O.C.G.A. §12-5-122(31)) "Well" means any excavation in which the vertical dimension exceeds the horizontal dimension that is bored, cored, drilled, dug, jetted, or otherwise constructed for the purpose of locating, testing, or withdrawing groundwater; or for evaluating, testing, developing, draining, or recharging groundwater reservoirs or aquifers; or for the exploration, evaluating, testing, or developing of minerals; or which causes the movement of water from or into any aquifer or subsurface strata; and includes engineering and geologic boreholes. (O.C.G.A. §12-5-122(33))

Permit type:

Construction: Before actual construction, the water well contractor must notify the county health department of the intent to drill a water well. (O.C.G.A. §12-5-134(1)(A)(i))

Construction standards

Casing requirements: All permanent casing used in the well installation must be new and adequate to protect the well against entrance of pollutants or contaminants during the expected life of the well. The casing material must be of steel, plastic, or concrete and meet nationally accepted standards for well casing. (O.C.G.A. §12-5-134(N))

Grouting requirements: A well having an open annular space between the casing and borehole must be grouted and filled with neat or sand-cement grout or other impervious material to prevent the entrance of pollutants or contaminants to the well. (O.C.G.A. §12-5-134(M))

Grouting composition: Grout is to be neat or sand-cement grout or other impervious material. (O.C.G.A. §12-5-134(M))

Well reports

Well completion report: The drilling contractor must maintain and furnish the owner a copy of a report providing certain well construction data within 30 days of the well completion. (O.C.G.A. §12-5-134(L))

Pump installation requirements: Any person who conducts business as a pump installer in Georgia must obtain and maintain a valid pump installers certificate and post a performance bond or irrevocable letter of credit. Pump installation must be in accordance with all applicable federal, state and local building, electrical, and plumbing codes and regulations. (DNR Rule 391-3-29-.09(1)(2))

Abandonment requirements: A water well shall be considered as permanently abandoned when its service has been interrupted for a period of more than three years or is in such a state of disrepair that continued use for obtaining groundwater or for other useful purposes is impracticable, or from which groundwater for useful purposes is not obtainable. (O.C.G.A. §12-5-135(6)(B))

Procedures: All abandoned wells must be filled, sealed, and plugged by a licensed water well contractor. (O.C.G.A. §12-5-135(6)(I))

Penalties

Civil: Any person who intentionally or negligently causes any discharge of waste or other material resulting in a condition of pollution will be liable in damages to the state for any and all costs, expenses, and injuries occasioned by such discharges. The amount of the damages

assessed shall include, but not be limited to, the costs of clean up and abatement, replacing any aquatic life destroyed by such discharge. (O.C.G.A. §12-5-51) In addition, any person violating any permit provision, or negligently or intentionally, failed to comply with any order of the GAEPD shall be liable to a civil penalty not to exceed $50,000 per day for each day during which the violation continues. (O.C.G.A. §12-5-52)

Criminal: Any person who violates any permit condition or limitation or who fails, neglects, or refuses to comply with any final order of a court, or who violates any requirement imposed in a pretreatment program approved by the GAEPD or who introduces into a sewer system or into a POTW any pollutant which causes personal injury or property damage or which causes such treatment works to violate any effluent limitation or permit conditions shall be guilty of a misdemeanor and fined not less than $2,500 per day nor more than $25,000 per day of violation, or imprisoned no more than one year, or both. If the conviction is for a violation committed after a first conviction punishment shall be a fine of not more than $50,000 per day of violation, by imprisonment for not more than two years, or both.

Criminal felony penalties also attach to the following actions:

- knowingly making a false statement, representation, or certification in a permit application or knowingly rendering inaccurate any monitoring device;
- knowingly violates any provision of the Act or permit condition, or knowingly fails, neglects, or refuses to comply with a final court order. (O.C.G.A. §12-5-53)

State Case Law

Nuisance

- *Tri-County Investment Group, Ltd. v. Southern States, Inc*., 500 S.E.2d 22, (Ga. App. 1998): Tri-County Investment Group, Ltd., a Georgia Corporation, sued Southern States, Inc. for alleged groundwater contamination of its property. The court found insufficient evidence to support a finding that Southern willfully or with conscious indifference failed to abate the nuisance.

- *Bell Industries v. Jones*, 141 S.E. 2d 533 (Ga. 1965): The GA Water Quality Control Act does not alter general rules of law in regard to private nuisances and will neither aid nor hinder a private individual in an action to enjoin a nuisance.

KENTUCKY

The Kentucky Department for Environmental Protection, an agency in the Environmental and Public Protection Cabinet, ensures protection of Kentucky's water quality through issuance of permits. Kentucky statutes and regulations do not specify use classifications or quality standards for state groundwater resources. Groundwater is protected in Kentucky through issuance of no-discharge operational permits and groundwater protection plans. Kentucky statutes and regulations do not contain criteria for permit issuance, performance bond requirements, or buffer requirements. The state's non-point source pollution control program relies on best management practices.

General policy:

Policy statement: It is the policy of Kentucky to conserve the waters of the commonwealth for public water supplies and other legitimate uses and to provide a comprehensive program in the public interest for the prevention, abatement and control of pollution. (K.R.S. §224.70-100(1) (2004))

Responsible agency: State law charges the Environmental and Public Protection Cabinet (Cabinet) with implementation of Kentucky's water quality laws. The Cabinet carries out its responsibilities through the Kentucky Department for Environmental Protection (KDEP).(K.R.S. §224.70-120(1))

Type of water quality standards employed: Kentucky does not specify water quality standards for groundwater.

Non-point source pollution: The Cabinet shall ensure that non-point sources of pollutants are controlled by application of all cost effective and reasonable best management practices. (401 K.A.R. 5:029, Section 1(2) (2004))

Permit types

No Discharge Operational Permit: An operation permit must be obtained prior to beginning operation of a non-discharging sewage system, defined as those constructions used for collecting, pumping, treating, and disposing of liquid or waterborne sewage, industrial, or other wastes. Non-discharging sewage systems include closed circuit systems, subsurface injection, and land application of effluent. (K.R.S. §224.10-100, K.R.S. §224.70-100)

Groundwater Protection Plans: A Groundwater Protection Plan must be held on site when any person engages in an activity with the potential to contaminate groundwater. Generic plans may be submitted before implementation. Site-specific plans are not required until the Cabinet requests them. (K.R.S. §224.01-010, K.R.S. §224.10-100, K.R.S. §224.70-100)

Decision maker: State law charges the Environmental and Public Protection Cabinet (Cabinet) with implementation of Kentucky's water quality laws. The Cabinet carries out its responsibilities through the Kentucky Department for Environmental Protection (KDEP). (401 K.A.R. 5:055)

Criteria for issuance: A permit shall not be granted to any facility which is not compatible, as determined by the cabinet, with a regional facility plan or with a water quality management plan approved by the cabinet or the USEPA. (401 K.A.R. 5:005)

Buffer required: There are no buffer requirements to protect groundwater quality in Kentucky.

Bond required: Kentucky does not have a bond requirement.

Permit duration: Most permits are valid for up to five years. (401 K.A.R. 5:070, Section 1)

Unauthorized discharge reporting requirements: The permittee shall orally report any noncompliance which may endanger heath or the environment, within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. (401 K.A.R. 5:065, Section 1, (12)(f))

Fees: A permit applicant is subject to a filing fee in the amount of 20 percent of the discharge permit fee. When a permit is issued, the applicant is also subject to a discharge permit fee that is equal to the cost of review. (K.R.S. §224.70-120(2)(3))

Transfers/modifications/revocations authorized: Permits may be modified, revoked and reissued, or revoked for cause. The permit shall not be transferable to any person, except after notice to the Cabinet. The Cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate other requirements as may be necessary. (401 K.A.R. 5:065, Section 1(6)(12)(c); 401 K.A.R. 5:070, Section 5 and Section 6)

Public notice/hearing requirements: During the public comment period any interested person may request a public hearing, if no hearing has already been scheduled. The Cabinet shall hold a public hearing, if a significant degree of public interest in a draft permit is found on the basis of requests. (401 K.A.R. 5:075, Section 6, Section 7)

On-site Sewage Disposal Systems

Permit requirements: A permit to construct, install, or alter an on-site sewage disposal system must be obtained from the Cabinet for Health Services prior to construction of any portion of that system.(902 K.A.R 10.085 Section 2 (1)(e))

Inspection requirements: Every on-site sewage disposal system installed, constructed, altered or repaired must be inspected by a certified inspector. (902 K.A.R. 10.085 Section 9(1))

Filter requirements: The use of septic tank effluent filters is required for on-site systems. (902 K.A.R. 10.085 Section 6 (2)(a)(4))

Allowance for drainfield areas/size reductions: Kentucky regulations allow for drainfield area/size reductions. The initial sizing is based on soils, advanced treatment, and alternative treatment. (National Small Flows Clearinghouse Regulations Database: http://www.nesc.wvu.edu/nsfc/pdf/summaries/KENTUCKY.PDF)

Minimum lot size requirements: None found.

Methods to limit use of septic tanks: None

Driller Licensing Requirements

License type: It is unlawful for any person to construct, alter, or repair a water well without first having obtained a valid certificate. (K.R.S. §223.405)

Exemptions: Those persons who are water witchers, dowsers, diviners, and any others who use divining rods for the purpose of locating underground water resources shall be exempt from KRS 223.405 to 223.460 for the purpose of locating underground water resources, but are not exempt from the requirements of KRS 223.405 to 223.460 for the purpose of installing water wells. (K.R.S. §223.425(4))

Minimum licensing requirements: The applicant must be at least 18 years of age, be a U.S. citizen, have worked for two years under the supervision of a certified water well driller or have other suitable experience or education, and have passed the certification examination. (K.R.S. §223.425(2))

Examination required: All applicants for water well certification must have obtained a passing grade of 70 percent or more on the examination. (K.R.S. §223.425(2)(d))

Fees required: An applicant for a water well driller certification is subject to a fee of $25. An applicant for a water well driller's certification, upon notification that all requirements have been met for certification, is subject to a certification fee of $100 for initial certification. An applicant for a water well driller's certificate renewal is subject to a renewal fee of $100. (K.R.S. §223.447)

Renewal period: The term of each certificate is one year. (K.R.S. §.223.425(5))

Penalty: Any person who fails to comply with the certification provisions of KRS 223.425 shall be liable for a civil penalty not to exceed $1,000 for each day during which a violation continues, and in addition may be concurrently enjoined from any violations. Any person certified under the provisions of KRS 223.425, who violates KRS 223.405 to 223.460 or fails

to perform any duties imposed by these sections, or who violates any determination, rule, regulation or order or determination of the secretary may be subject to proceedings for certificate suspension or revocation, or nonrenewal of a certificate. Any person found guilty of violating the certification provisions of KRS 223.425 or the rules and regulations adopted thereunder shall be guilty of a misdemeanor and may be fined not less than one hundred dollars ($100) nor more than five hundred dollars ($500) for each violation or imprisoned not more than thirty (30) days or both. Each day the violation continues shall be considered a separate violation. (K.R.S. §.223.991)

Appeal process: All enforcement proceedings shall be conducted pursuant to KRS Chapter 224, and all certificate revocation and enforcement actions shall be subject to the administrative and judicial procedures contained in KRS Chapter 224. (K.R.S. §.223.991)

Water Well Standards

Well/water well definition: "Water well" or "well" means any excavation or opening in the surface of the earth that is drilled, cored, bored, washed, driven, jetted, or otherwise constructed when the actual or intended use in whole or part of an excavation is the removal of water for any purpose, including but not limited to culinary and household purposes, animal consumption, food manufacture, use of geothermal resources for domestic heating purposes and industrial, irrigation, and dewatering purposes. (K.R.S. §223.400(7))

Permit type: None found.

Construction standards

Casing requirements: In all wells where the casing is driven, the driller may not use plastic casing. At least 20 feet of permanent casing must be installed. Casing may not be cut off or into below ground, unless a pitless well unit or adapter is being installed. National Sanitation Foundation standards must be followed. Outer casings are to be removed after well completion. Plastic well casing and liners should be Standard Dimension Ratio rated. (Water Systems Council: State Well Codes: Kentucky; www.watersystemscouncil.org/wellcodes/index.cfm)

Grouting requirements: The regulations provide procedures for preparing and placing cement grout. (401 K.A.R. 6:310 Section 9(7))

Grouting composition: Grouting may consist of concrete, cement, neat cement, or a neat cement-bentonite slurry. (401 K.A.R. 6:310 Section 9(7)(a)(b)(c))

Well reports

Well completion report: Within 30 days after a water well has been constructed or modified, the driller must submit a report of construction. (401 K.A.R. 6:310 Section 3(2))

Pump installation requirements: None found.

Abandonment requirements: If a constructed water well is not suitable for its intended purpose and is to be abandoned, the owner must ensure that the abandonment procedures are implemented as soon as possible, but no later than 30 calendar days after the owner has made the decision that the well is not to be used. (401 K.A.R. 6:310 Section 12(1))

Procedures: Before a well which is to be abandoned is sealed, the driller must measure the depth and check to ensure that there are no obstructions within the well which may interfere with plugging operations. The driller must pull or drill out screens, casings and liner pipes whenever possible to assure placement of an effective seal. The driller must remove at least the upper five feet of casing, liner pipe, brick, stone, metal, or other materials in all wells to prevent the passage of water along the casing and entering the water-bearing strata. The driller must pull rather than cut the top joint of all plastic or steel casing. The driller must also disinfect the well and fill materials by using sodium hypochlorite or calcium hypochlorite. The driller must fill the aquifer or water-bearing zones in the wells with clean, disinfected, and dimensionally stable materials. The driller must mechanically pack the fill materials to avoid later settlement. The driller may use only neat cement grout, a neat cement-bentonite slurry, or bentonite in plugging water wells. In all cases, clay may be used to fill the uppermost five feet of the bore-hole. The driller must introduce neat cement or neat cement-bentonite grout used as a sealing material in abandonment operations at the bottom of the well or interval to be sealed and must place it progressively upward to the top of the well. For all such sealing materials the driller must use grout pipe, tremie, cement bucket or dump bailer, in such a way as to avoid segregation or dilution of the sealing materials. Dumping grout material from the top is not permitted. (401 K.A.R. 6:310 Section 12(1)(a)(b)(c)(d))

Applicability: These regulations apply to public and private wells. (Water Systems Council: State Well Codes: Kentucky; www.watersystemscouncil.org/wellcodes/index.cfm)

Penalties

Civil: Any person who violates any permit shall be liable for a civil penalty not to exceed the sum of $25,000 for each day during which such violation continues. (K.R.S. §224.99-030(1))

Criminal: Any person who knowingly violates any permit or who knowingly provides false information in any document required to maintained, or who knowingly renders inaccurate any monitoring device is guilty of a Class D felony, and shall be punished by a fine not to exceed $25,000 or by imprisonment for a term of not less than one year and not more than five years, or by both. (K.R.S. §224.99-030(4))

State Case Law

There is no significant Kentucky state case law concerning groundwater quality issues.

MISSISSIPPI

The Mississippi Department of Environmental Quality implements day-to-day activities to protect the state's water quality. The Mississippi Commission on Environmental Quality sets state policy, adopts regulations, and takes enforcement actions. State law charges the Environmental Quality Permit Board with issuance of water pollution control permits. It is illegal in Mississippi to discharge pollution without prior treatment. The policy of the state is to conserve, protect, and maintain the quality of groundwater. In order to accomplish this goal, the Permit Board issues underground injection control permits for Class I, III, and IV wells and state discharge permits, while the State Oil and Gas Board issues Class II underground injection control permits. The Permit Board may consider a facility's compliance history, financial capability, and financial responsibility before issuing such a permit. Performance bonds may be required as proof of financial security. Mississippi regulations contain buffer requirements, but do not specify use classifications or quality standards for groundwater.

General policy:

Policy statement: It is the policy of the State of Mississippi to conserve the waters of the state and to protect, maintain and improve the quality thereof for public use, for the propagation of wildlife, fish and aquatic life, and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses, and to provide that no waste be discharged into any waters of the state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters, and to provide for the prevention, abatement and control of new or existing water pollution. (M.C.A. §49-17-3 (2003))

Responsible agency: The Mississippi Department of Environmental Quality (MDEQ) is responsible for day-to-day activities to protect the state's water quality. The Mississippi Commission on Environmental Quality (MCEQ) sets state policy, adopts regulations and takes enforcement actions. State law charges the Environmental Quality Permit Board (Permit Board) with issuance, modification, revocation and denial of permits to control or prevent the discharge of contaminants and wastes into the waters of the state.
(M.C.A. §49-17-28(1))

Type of water quality standards employed: The MCEQ has not adopted water quality standards for groundwater.

Non-point source pollution: Mississippi relies on compliance with best management practices (BMPs) to prevent pollution from non-point sources. These BMPs include tree buffer zones, conservation tillage, and silt fences. To encourage use of BMPs, public outreach includes suggestions for farmers, gardeners, landscapers, civic leaders, and land developers and contractors.
(http://www.deq.state.ms.us/MDEQ.nsf/page/NPD_ManagingPollutedRunoffinMississippi?OpenDocument)

Permit types

Underground injection control permit: Any person discharging wastes or other fluids into underground waters of the state through the use of an injection well shall apply for a UIC permit. The Permit Board may issue a UIC permit to a person for discharges into underground waters of the state. (M.R. WPC-1, Section 1 (B)(2)(b)(2) (2001))

State/general permits: The Permit Board may issue individual or general permits for the operation of a treatment works from which no discharge occurs, for discharges into state waters where a UIC permit may not be applicable, or for discharges to a publicly owned treatment works (POTW) where a pretreatment system is used. Any person operating a treatment works from which no discharge of wastes occurs shall apply for a state permit or for coverage under a general permit. (M.R. WPC-1, Section 1 (B)(2)(b)(3)) In addition, any person discharging wastes into a POTW and which is subject to federal pretreatment standards, or which would cause interference with the proper operation of the POTW, cause violations of water quality standards by passing through the POTW, or cause contamination of sludges which would limit to prevent the proper disposal of the sludge shall apply for a state permit. (M.R. WPC-1, Section 1 (B)(2)(b)(4))

Exemptions: A person discharging or proposing to discharge the following types of wastes shall not be required to apply for a permit from the Permit Board:

- human sewage from vessels;
- water, gas and other materials injected into a well to facilitate production of oil or gas, or fluids derived in association with oil or gas production and disposal in a well, where authorized by the State Oil and Gas Board;
- wastes or other fluids authorized for injection into a Class V well;
- storm sewers exempted under 40 CFR 122.26 and not connected to wastewater treatment works, unless a particular stormwater discharge has been identified as a significant contributor to pollution; and
- any introduction of pollutants from non-point source agricultural and silvicultural activities, including stormwater runoff from orchards, cultivated crops, pastures, range lands and forest lands and return flows from irrigated agriculture.

(M.R. WPC-1, Section 2(B))

Decision maker: The Permit Board issues, modifies, revokes or denies permits to control or prevent the discharge of contaminants and wastes into the waters of the state.
(M.C.A. §49-17-28(1))

Criteria for Issuance: In considering an application for a permit issuance or transfer, the Permit Board may consider engineering/technical factors, the applicant's compliance history, financial capability, financial responsibility, or any other aspect of the applicant's history it deems necessary or appropriate. (M.R. WPC-1, Section 3(H)(1))

Buffer required: No permit for a new waste treatment facility will be issued unless the facility can comply with buffer zone requirements contained in Mississippi regulations.
(M.R. WPC-1, Section 1, (C)(2))

Bond required: The Permit Board may require any applicant for a water pollution control permit for the discharge of effluent from any sewer system to provide a bond or other acceptable financial security. (M.C.A. §49-17-44(1))

Permit duration: The duration of an NPDES permit shall be established in accordance with 40 C.F.R. 122.46. A state operating permit may be issued for a period not to exceed five years. A UIC permit shall be issued for a term not to exceed 10 years. (M.R. WPC-1, Section 5(A)(1))

Unauthorized discharge reporting requirements: The permittee shall report any noncompliance which may endanger health or the environment orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. Information that must be reported within 24 hours includes:

- any unanticipated bypass which exceeds any effluent limitation in the permit;
- any upset which exceeds any effluent limitation in the permit; and
- violation of a maximum daily discharge limitation for any of the pollutants listed by the Permit Board in the permit to be reported within 24 hours.

(M.R. WPC-1, Section 4(A)(29)(e)(1)(2))

Fees: Neither Mississippi laws nor regulations authorize fees for water pollution control permits.

Transfers/modifications/revocations authorized: Mississippi regulations allow permit transfers as follows:

- A permit shall not be transferred except upon approval of the Permit Board;
- A permit transfer shall be approved, if the applicant for transfer approval can demonstrate to the Permit Board it has the financial resources, operational expertise and environmental compliance history over the last five years to insure compliance with the terms and conditions of the permit transferred, except where this conflicts with state law; and
- The application for approval of the transfer may be combined with an early application for permit renewal. (M.R. WPC-1, Section 5(C)(2))

If the permittee requests a modification of a permit which will neither cause the original compliance schedule to be extended more than four months, nor cause an increase in the effluent limits, the modification may be immediately granted by the Permit Board. If the permittee requests a modification of a permit which will cause the original compliance schedule to be extended more than four months, or cause effluent limitations to be less stringent prior to the Permit Board granting such modification of an NPDES or UIC permit, the USEPA Region 4 Administrator shall be given a reasonable time, as agreed between the State and USEPA, in which to object in writing and any such objections shall be resolved before the modification is granted. (M.R. WPC-1, Section 5(C)(3)(4)). In addition, the permit may be modified, revoked and reissued, or terminated for cause. (M.R. WPC-1, Section 5(C)(5))

Public notice/hearing requirements: Before the issuance, reissuance, denial, modification or revocation of any water pollution control permit, the Permit Board, at its discretion, may hold a public hearing or meeting to obtain comments from the public on its proposed action. In addition, within 30 days after action is taken upon a permit, any interested person (defined as any person claiming an interest relating to the property or project which is the subject of the permit action) aggrieved by that action may file a written request for a formal hearing before the Permit Board. (M.C.A. §49-17-29(4(a)(b))

On-site Sewage Disposal Systems

Permit requirements: Prior to construction or placement of any residence which might require the installation of an individual on-site sewage disposal system, the developer or owner must submit a Notice of Intent to the county health department, which then carries out a soil and site evaluation. (MSDH 300-Section 2.6)

Inspection requirements: A property owner may request the Mississippi Department of Health to approve the design, construction and installation of an on-site sewage disposal system. Inspection of the final installation is not required by law or regulation.
(M.C.A. §41-67-6 (2003))

Filter requirements: Effluent filters are not required

Allowance for drainfield areas/size reductions: Mississippi law does not allow for drainfield area/size reductions.

Minimum lot size requirements: Mississippi law does not have minimum lot size requirements.

Methods to limit use of septic tanks:

Concurrency/adequate public facilities requirement: The MCEQ shall determine the feasibility of establishing community sewerage systems in subdivisions upon the submission by the developer of a preliminary design and feasibility study prepared by a professional engineer. (M.C.A. §41-67-4 (2003))

Local ordinances that permit use of septic tanks: Mississippi law authorizes municipalities and counties to adopt on-site sewage disposal system ordinances that are more stringent than state requirements. (M.C.A. §41-67-15 (2003))

Driller Licensing Requirements

License type: Every person desiring to engage in the business of drilling wells must file an application for a drilling license. (M.C.A. §51-5-1(1))

Exemptions: Nothing in this chapter will prevent a person who has not obtained a water well drilling license from constructing a water well on his or her own or leased property intended for use only in a single family house which is his or her permanent residence, or intended for use only for watering livestock on his or her farm, and where the waters to be produced are not intended for use by the public or any residence other than his or her own.
(M.C.A. §51-5-1(3))

Minimum licensing requirements: In order to be licensed as a water well contractor in Mississippi, the applicant must:

- be at least 21 years of age;
- be of good moral character
- demonstrate a reasonable knowledge of the rules and regulations pertaining to water well drilling;
- possess the necessary drilling equipment; and
- have at least three years experience in the work for which he is applying for a license.

(M.C.A. §51-5-3)

Examination required: Every person desiring to engage in the business of drilling wells must file an application with the MCEQ setting out qualifications and including any examination, oral or written, as may be required by the board.
(M.C.A. §51-5-1(1))

Fees required: The fee for a water well drilling license is $100 per year. (M.C.A. §51-5-1(1))

Renewal period: All licenses expire on June 30 of each year and are renewable annually upon payment of the required fee. (M.C.A. §51-5-1(2))

Penalty: When it is determined that the licensee has violated any provisions of the rules and regulations pertaining to water well drilling, the license may be suspended or revoked. (M.C.A. §51-5-9(1))

Appeal process: The licensee may appeal from the MCEQ's findings to a court of competent jurisdiction as provided by Mississippi law, provided notice of appeal is given to the MCEQ within ten days of such board action. (M.C.A. §51-5-9(3))

Water Well Standards

Permit type:

Construction: Construction permits are required for public wells. (Water Systems Council: State Well Codes: Mississippi; www.watersystemscouncil.org/wellcodes/index.cfm)

Construction standards

Casing requirements: Casings must meet American Waterworks Association (AWWA) standards. (Water Systems Council: State Well Codes: Mississippi; www.watersystemscouncil.org/wellcodes/index.cfm)

Grouting requirements: The annular space must be grouted from a depth of at least 10 feet below the surface to the surface. Wells located within 100 feet of a potential pollution source must be grouted from a depth of at least 50 feet below the surface to the surface. Wells located within one-quarter mile horizontally of a known existing area of contaminated aquifer must be grouted from the seal to the surface. For continuous lengths of grout not separated by multiple screens, grout must be introduced in one continuous operation from the top of the seal to the surface. (GeoExchange website; www.geoexchange.org/regulations)

Grouting composition: Grout on all holes must consist of neat cement, cement grout, cement-bentonite mixture, or bentonite. (GeoExchange website; www.geoexchange.org/regulations)

Well reports

Well completion report: Each driller must, within 30 days after completion of each well, file a report containing such information with MDEQ. (M.C.A. §51-5-13)

Drillers log or e-log: Water well drillers must fill out a two-part State Well Report. The first part contains information associated with drilling the hole and setting and grouting the casing while the second part contains information associated with well completion and pump installation. (Mississippi Department of Environmental Quality website; http://www.deq.state.ms.us/MDEX.nsf)

Pump installation requirements: Pump installation requirements are as follows:

- appurtenances to include 0.75 inches sampling faucet, test tee, check and gate valve, and freeze protection;
- foundation not to extend less than 18 inches into solid ground or above finished grade or 100-year flood level;
- materials used should be corrosion resistant;
- pump head to be connected to outside casing by threaded connection;
- pump head to be mounted on chamfered concrete foundation, no smaller than 24 inches square at the top;
- to have phase failure and lightning protection, anti-reverse ratchet, air release valve, and vent;
- to have single piece non-plastic air line gauge and casing access pipe;
- vacuum seal to be provided between foundation and pump head casing before setting pump head casing

- AWWA standards and Mississippi Department of Health design criteria;
- sized for operating conditions. (Water Systems Council: State Well Codes: Mississippi; www.watersystemscouncil.org/wellcodes/index.cfm)

Abandonment requirements:

Procedures: The MDEQ requires that pressure grout be applied to abandoned wells from bottom to top. (Water Systems Council: State Well Codes: Mississippi; www.watersystemscouncil.org/wellcodes/index.cfm)

Penalties

Civil: Any person found to be violating the terms of their permit or any rule or regulation of the MCEQ shall be subject to a civil penalty of not more than $25,000 for each violation. The MCEQ may institute and maintain in the name of the state any and all proceedings necessary to enforce state law in the appropriate circuit, chancery, county or justice court of the county in which venue may lie. The commission may obtain mandatory or prohibitory injunctive relief, either temporary or permanent. (M.C.A. §49-17-43(1)(2))

State Case Law

There is no significant Mississippi case law concerning groundwater quality issues.

NORTH CAROLINA

The North Carolina Department of Environment and Natural Resources implements statewide regulatory programs for groundwater protection. It is the policy of North Carolina to preserve, protect and enhance the state's groundwater resources through efficient permitting, and to this end the state issues well construction and non-discharge permits to control groundwater pollution. The Department has specified use classifications and quality standards for groundwater. North Carolina relies on a voluntary non-point source pollution management program to reduce the harmful effects of land uses on groundwater.

General policy:

Policy statement: It is the policy of the State of North Carolina to provide for the conservation of its waters and to maintain, protect, and enhance water quality within the state. (N.C.G.S. §143-211(a)(b) (2003))

Responsible agency: The Department of Environment and Natural Resources (NCDENR) administers the state's water pollution control and water resource management programs. (N.C.G.S. §143-211(c) (2004))

Type of water quality standards employed: The NCDENR has established a series of water classifications based on factors such as the natural quality of the groundwater and the condition of occurrences, recharge, movement and discharge, the vulnerability to pollution from wastewaters and other substances, and the potential for improvement of the quality and quantity of the water. (N.C.G.S. §143-214.1(d)(5). The NCDENR has also established numerical and narrative standards applicable to each classification. (N.C.G.S. §143-214.1(c))

Non-point source pollution: The Non-point Source Management (NPS) Program coordinates all NPS programs and efforts within NCDENR and the state at large with the goal of reducing the harmful effects of land uses on surface and groundwater. The program has the following goals:

- to better coordinate the efforts of the various non-point source agencies, local governments, and other stakeholders within North Carolina in support of the mission;
- to prioritize the state's waters and to target management efforts, advocating the most cost-effective measures available, in support of the mission;
- to integrate with related management programs and to develop new initiatives as needed in support of the mission; and
- to account for the progress of management strategies in support of the mission.

(http://h2o.enr.state.nc.us/nps/NPS_Management_Program.htm#Goals%20of%20the%20%0A%09NC%20Nonpoint%20Source%20Management%20Program)

Permit types

Well construction permits: Well construction permits are issued for water supply wells/well systems with a capacity of 100,000 gallons per day; contaminated groundwater recovery wells; injection wells other than those associated with groundwater remediation; and

monitoring wells for evaluating groundwater quality. The well construction permits, along with well construction records, submitted by the drillers upon completion of construction, allow review of well location and construction with respect to health protection standards. (http://gw.ehnr.state.nc.us/permits.htm) (N.C.A.C. 15A, 02H .0202 (2004))

Non-discharge permits: Applications for wastewater disposal systems that do not discharge their waste to surface waters of the state are also reviewed from the standpoint of groundwater protection. Groundwater protection provides that groundwater mixed with wastewater does not leave the property and affect groundwater supplying water wells. (http://gw.ehnr.state.nc.us/permits.htm) (N.C.A.C. 15A, 02H .0202)

Exemptions: This permit requirement does not apply to sanitary sewage systems or solid waste management facilities which are permitted under the authority of the Commission for Health Services. (N.C.A.C. 15A, 02H .0202)

Groundwater remediation systems: These are permitted as non-discharge facilities. These systems pump contaminated groundwater, treat the water, and reintroduce the water into the subsurface. The review process not only involves the normal non-discharge protection, but goes one step further, in that the permitted system cannot cause the existing contaminate plume to become larger, contaminating more groundwater and increasing cleanup time and costs. (http://gw.ehnr.state.nc.us/permits.htm) (N.C.A.C. 15A, 02H .0202)

Decision maker: The Director of the NCDENR Division of Water Quality (Director) takes final action on all permits so as to prevent violation of water quality standards.
(N.C.A.C. 15A, 02H .0112)

Criteria for Issuance: The Director may issue a permit containing time schedules for achieving compliance with applicable effluent standards and limitations, water quality standards, and other legally applicable requirements. (N.C.A.C. 15A, 02H .0112(b)(2))

Buffer required: Example of buffer requirements: Minimum 100-foot vegetative buffer is required for all new development activities that exceed the low density option requirements; otherwise a minimum 30-foot vegetative buffer for development activities is required along all perennial waters indicated on the most recent versions of the USGS 1:24,000 scale topographic maps or as determined by local government studies. (Fresh surface water quality standards for class WS-II waters) (N.C.A.C. 15A, 02B 0214(3)(b)(i)(G))

Bond required: No mention of a bond requirement is made in the statutes or regulations.

Permit duration: No permit shall be issued or renewed for a term exceeding five years.
(N.C.G.S. §143-215.1(c)(5))

Fees: The NCDENR adopts fee schedules for processing of permit applications and for administering permits which is charged on an annual basis. (N.C.G.S. §143-215.3(a)(1)(1b))

Unauthorized discharge reporting requirements: Every permittee shall report by telephone to either the central office or appropriate regional office of the NCDENR, Division of Water Quality as soon as possible, but no later than 24 hours after occurrence or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

- any failure of a collection system, pumping station or treatment facility resulting in a by-pass without treatment of all or any portion of the wastewater;
- any occurrence at the water pollution control facility which results in the discharge of significant amounts of wastes which are abnormal in quantity or characteristic, such as the dumping of the contents of a sludge digester, the known passage of a hazardous substance through the facility, or any other unusual circumstances; or
- any process unit failure, due to know or unknown reasons, that renders the facility incapable of adequate wastewater treatment, such as mechanical or electrical failures of pumps, aerators, compressors, etc.

A written report must also be provided within five days following first knowledge of the occurrence. (N.C.A.C. 15A, 02H .0506(a)(2))

Transfers/modifications/revocations authorized: Any issued permit is subject to revocation or modification in whole or part for any of the following:

- violation of any terms or conditions of the permit;
- obtaining a permit by misrepresentation or failure to disclose fully all relevant facts;
- a change in any condition that requires either a temporary or permanent reduction or limitation of the permitted discharge;
- refusal of the permittee to allow the Director:
  - to enter upon permittee's premises in which an effluent source is located or in which any records are required to be kept under terms and conditions of the permit;
  - to have access to any copy and records required to be kept under terms and conditions of the permit;
  - to inspect any monitoring equipment or method required in the permit, or
  - to sample any discharge of pollutants; and
- failure to pay the annual fee for administering and compliance monitoring.

(N.C.A.C. 15A, 02H .0114(a))

Public notice/hearing requirements: If any person desires a public hearing on any application for permit or renewal of an existing permit, that person shall so request in writing within 30 days following date of the notice of intent. If the NCDENR determines that there is a significant public interest in holding such a hearing, at least 30 days notice of the hearing shall be given to all persons to whom notice of intent was sent and to any other person requesting notice.
(N.C.G.S. §143-215.1(c)(3))

On-site Sewage Disposal Systems

Permit requirements: An application for an improvement permit, authorization for wastewater system construction, and operation permit must be submitted to the local health department for each site prior to the construction, location, or relocation of a residence, place of business, or place of public assembly. (N.C.A.C. 15A, 18A.1937(b)(c))

Inspection requirements: Performance monitoring must be carried out by the on-site sewage disposal system operator through inspections that confirm proper mechanical performance. (N.C.A.C. 15A, 18A.1957(c)(7)(A))

Filter requirements: Septic tanks must have an approved effluent filter that can function without a bypass of unfiltered wastewater, sludge, or scum. (N.C.A.C. 15A, 18A.1952(a))

Allowance for drainfield areas/size reductions: North Carolina allows for drainfield area/size reductions based on technology, soils, and long-term loading rate.
(N.C.A.C. 15A, 18A.1942(e)(4))

Minimum lot size requirements: North Carolina does not have minimum lot size requirements.

Availability of ways to limit use of septic tanks: Counties may adopt a ban on septic tanks if they can show a substantial purpose. (*Ocean Acres Ltd. Partnership v. Dare County Bd. of Health*, 707 F.2d 103 (4th Cir. 1983))

Driller Licensing Requirements

License type: All well contractors in North Carolina must apply for and receive certification. (N.C.A.C. 15A, 27.0100)

Exemptions: None found.

Minimum licensing requirements: Applications for certification as a well contractor must be accepted from any person who is at least 18 years of age, can provide proof of at least 18 months of full-time experience. (N.C.A.C. 15A, 27.0301(a)(f))

Examination required: An applicant for certification must pass an examination within three consecutive attempts or within a one year period of time after application submittal, which ever expires first. (N.C.A.C. 15A, 27.0301(c)) A grade on the examination of 70 percent or more shall be passing. (N.C.A.C. 15A, 27.0410)

Fees required: The following fees are required for well contractors:

- Annual fee: $200 for new application or renewal of certification
- Examination fee: $50
- Temporary certification: $100 (N.C.A.C. 15A, 27.0201)

Renewal period: Annually. (N.C.A.C. 15A, 27.0601(a))

Penalty: The Commission may revoke or suspend the certification of a well contractor. (N.C.A.C. 15A, 27.0901(a))

Appeal process: Upon notification of the Commission's decision to deny eligibility for recertification following revocation, the applicant may appeal the decision.
(N.C.A.C. 15A, 27.0901(d))

Water Well Standards

Well/water well definition: "Well" means any excavation that is cored, bored, drilled, jetted, dug or otherwise constructed for the purpose of locating, testing, developing, draining or recharging any groundwater reservoirs or aquifer, or that may control, divert, or otherwise cause the movement of water from or into any aquifer. (N.C.A.C. 15A, 02C.0102(32))

Permit type

Construction: No person may locate or construct any of the following wells until a permit has been issued by the NCDENR Division of Water Quality:

- any water-well or well system with a design capacity of 100,000 gallons/day or greater;
- any well added to an existing system where the total design capacity of such existing well system and added well will equal or exceed 100,000 gallons/day;
- any monitoring well, constructed to assess the impact of an activity not permitted by the state, when installed on property other than that on which the unpermitted activity took place;
- any recovery well;
- any well for recharge or injection purposes;
- any well with a design deviation from the standards specified under the rules or regulations of the state. (N.C.A.C. 15A, 02C.0105(a))

Construction standards

Casing requirements: Casing depth is determined by the area in which the well is located. Casing must be seated at least one foot into rock, if extracting water from consolidated rock. Casing must extend at least one foot into the top of water-bearing formation, if water is from unconsolidated rock. (N.C.A.C. 15A, 02C.0107(d))

Grouting requirements: Grout must be placed within five days after casing is set. Grout must extend outward from casing wall to a minimum thickness equal to 1/3 the diameter of the outer diameter of casing or two inches, whichever is greater.
(N.C.A.C. 15A, 02C.0107(e))

Grouting composition: None found.

Well reports

Well abandonment report: Any person abandoning any well must submit to the Division a record of the abandonment. For public water supply wells, a copy of each abandonment record must also be submitted to the Health Department responsible for the county in which the well is located. The report must be submitted within a period of 30 days after abandonment. (N.C.A.C. 15A, 02C.0114(b)(1)(2))

Well construction report: Any person completing the construction of any well must submit to the Division a record of the construction. For public water supply wells, a copy of each completion record must also be submitted to the Health Department responsible for the county in which the well is located. The report must be submitted within 30 days after completion. (N.C.A.C. 15A, 02C.0114(b)(1)(2))

Pump installation requirements: In installations where the pump is not located directly over the well, the annular space between the casing and pump intake or discharge piping must be closed with a watertight seal preferably designed specifically for this purpose. The pumping capacity of the pump must be consistent with the intended use and yield characteristics of the well. (N.C.A.C. 15A, 02C.0109)

Abandonment requirements: Any well which has been permanently abandoned must be abandoned in accordance with state procedures. (N.C.A.C. 15A, 02C.0113(b))

Procedures: Casing and screen materials must be removed prior to initiation of abandonment. Cement grout must be used to fill wells in unconsolidated formations. Wells must be disinfected prior to sealing. In gravel-packed wells where casing and screens have not been removed, neat cement must be injected into the well. Temporarily abandoned wells must be protected with casing. Top of sand, gravel, or cutting fill must be at least five feet below the top of consolidated rock. The well must be sealed with a water-tight cap or seal. The well must be sounded before it is sealed. Wells in consolidated rock may be filled with sand, gravel, or drill cuttings.
(N.C.A.C. 15A, 02C.0113(b)(1))

Penalties

Civil: A civil penalty of not more than $25,000 may be assessed against any person who:

- violates any classification, standard, limitation, or management practice established under this statute;
- is required, but fails, to apply for or to secure a permit or who violates or fails to act in accordance with the terms, conditions, or requirements of a permit;
- violates or fails to act in accordance with the terms, conditions, or requirements of any special order;
- refuses access to the NCDENR or its duly designated representative to any premises for the purpose of conducting a lawful inspection; and
- violates or fails to act in accordance with the statewide minimum water supply watershed management requirements adopted pursuant to the statute.

(N.C.G.S.§143-215.6A(a))

A civil penalty my be assessed for more than $10,000 or, in the case of a continuing violation, more than $10,000 per day, against a violator only if a civil penalty has been imposed against the violator within the five years preceding the violation.
(N.C.G.S. §143-215A(b1))

Criminal: Any person who negligently violates any terms of this act shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed $15,000 per day of violation, provided that such fine shall not exceed a cumulative total of $200,000 for each period of 30 days during which a violation continues. Any person who knowingly and willfully violates any terms of this act shall be guilty of a Class I felony, which may include a fine not to exceed $100,000 per day of violation, provided that this fine shall not exceed a cumulative total of $500,000 for each period of 30 days during which a violation continues. Any person who knowingly violates any terms of this statute shall be guilty of a Class C felony, which may include a fine not to exceed $250,000 per day of violation, provided that this fine shall not exceed a cumulative total of $1,000,000 for each period of 30 days during which a violation continues. Any person who knowingly makes any false statement shall be guilty of a Class 2 misdemeanor which may include a fine not to exceed $10,000.
(N.C.G.S. §143-215.6(B)(f)(g)(h)(1)(i))

Administrative: If any action or failure to act for which a penalty may be assessed under this section is continuous, a penalty may be assessed not to exceed $25,000 per day for so long as the violation continues, unless otherwise stipulated. (N.C.G.S. §143-215A.6A(b))

State Case Law

There is no significant North Carolina state case law on groundwater quality issues.

SOUTH CAROLINA

The Department of Health and Environmental Control is charged with ensuring the quality of the state's groundwater. To accomplish this, the agency issues a wide variety of permits including underground injection control and land application permits. South Carolina has an extensive non-point source management program which includes regulatory and non-regulatory approaches. The state relies on best management practices and local ordinances to implement riparian buffer requirements. South Carolina specifies use classifications and quality standards for groundwater and its anti-degradation policy also includes groundwater.

General policy:

Policy statement: It is the public policy of South Carolina to maintain reasonable standards of purity of the water resources of the state, consistent with the public health, safety and welfare of its citizens, maximum employment, the industrial development of the state, the propagation and protection of terrestrial and marine flora and fauna, and the protection of physical property and other resources**.** (S.C.C.A. §48-1-20 (1987))

Responsible agency: The Department of Health and Environmental Control (SCDHEC) has the authority to promulgate environmental regulations under the South Carolina Pollution Control Act. (S.C.C.A. §48-1-29)

Type of water quality standards employed: The regulations contain class descriptions and specific numerical standards for groundwaters of the state. ((S.C.R 61-68(H) (2002))

Anti-degradation policy specified: It is the policy of South Carolina that existing water uses and the level of water quality necessary to protect these existing uses shall be maintained and protected regardless of the water classification and consistent with the following policies:

- The stream flows necessary to protect classified and existing uses and the water quality supporting these uses shall be maintained consistent with riparian rights to reasonable use of water; and
- Existing or classified groundwater uses and the conditions necessary to protect those uses shall be maintained and protected.

The highest statutory and regulatory requirements for all new and existing point sources shall be achieved and all cost-effective and reasonable best management practices for non-point source pollution control shall be achieved within the State's statutory authority and otherwise encouraged. (S.C.R. 61-68(D))

Non-point source pollution: The South Carolina Non-point Source Management Program has a strategic plan for addressing statewide water quality impairments attributable to non-point source pollution (NPS) discharges. The program is two-pronged: focusing on reducing NPS impacts in priority watersheds, and implementing activities statewide in order to prevent NPS pollution. Components include both regulatory and voluntary approaches. (http://www.scdhec.gov/eqc/water/pubs/nps.pdf)

Permit types

Underground injection control permits: A permit shall be obtained from the SCDHEC before constructing, operating, or using any Class II, III, IV(2)(a) or V.A. well for injection. (S.C.R. 61-87.13) The injection of any fluids to the subsurface or groundwaters of the state by means of an injection well is prohibited, except as authorized by a SCDHEC permit or rule. (S.C.R. 61-87.4) In addition, the movement of fluids containing wastes or contaminants into underground sources of drinking water as a result of injection is prohibited, if the presence of the waste or contaminant: may cause a violation of any drinking water standard, or may otherwise adversely affect the health of any person. (S.C.R. 61-87.5)

Exemptions: Requirements to obtain a UIC permit do not apply to any dug hole, or well which is not used for emplacement of fluids. (S.C.R. 61-87.3)

Land application system/state permits: The land application permit and state permit program requires permits for the discharge of pollutants from any source directly or indirectly into groundwater and to land. The following additional sources may be required to get land application permits or state permits for discharges:

- recirculated process wastewater;
- wastewater evaporation systems for process wastewater; and
- agricultural waste facilities, except those regulated as CAFOs. (S.C.R. 61-9.505.1(b))

Exemptions: The following discharges do not require land application permits or state permits:

- the introduction of sewage, industrial wastes or other pollutants into publicly owned treatment works by indirect discharges. This exclusion does not apply to the introduction of pollutants to privately owned treatment works or to other discharges through pipes, sewers, or other conveyances not leading to treatment works;
- any introduction of pollutants from non-point source agricultural and silvicultural activities, including stormwater runoff from orchards, cultivated crops, pastures, range lands, and forest lands, but not discharges directly or indirectly to groundwater and any land surface from other CAFOs and from silvicultural point sources;
- return flows from irrigated agriculture;
- discharges permitted under the underground injection control permit;
- individual sewage treatment and disposal systems serving one piece of deeded property. This includes, but is not limited to, any individual residence or single piece of deeded property using a septic tank system, if a permit for the discharge is obtained.
- a permit issued to construct an individual sewage treatment and disposal system serving more than one piece of deeded property, a land application or state permit will not be required. This exclusion may not apply, if industrial wastes or other pollutants are discharged. (S.C.R. 61-9.505.3)

Decision maker: The Department of Health and Environmental Control. (S.C.C.A. §48-1-20)

Criteria for Issuance: The SCDHEC establishes criteria for the imposition of technology-based treatment requirements in permits. (S.C.R. 61-9.125.1)

Buffer required: In South Carolina, local government efforts have led to the development of local ordinances establishing riparian buffers. The first county to enact a local buffer ordinance, Chester County, did so out of concern for protecting the water quality of the Broad and Catawba rivers. Other localities, concerned with rapid growth and development, have taken steps to enact buffer ordinances. Beaufort County, the town of Mount Pleasant, and Charleston County have adopted or are considering ordinances to address buffer protection. The agriculture and forest industries have also initiated successful non-regulatory programs to protect riparian forest buffers. Forestry, for example, has best management practice guidelines that include measures to establish and protect riparian areas. The Forestry Commission conducts inspections to determine if loggers are following the guidelines. If not, a list of loggers in noncompliance is published and ultimately, enforcement may be taken by SCDHEC under the Pollution Control Act's water pollution provisions. (http://www.scdhec.gov/eqc/water/pubs/npsrip.pdf)

Bond required: No mention of a bond requirement is made in the statutes or regulations.

Permit duration: Permits shall be effective for a fixed term not to exceed five years. (S.C.R. 61-9.122.46(a)

Unauthorized discharge reporting requirements: The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (S.C.R. 61-9.122.41)

Fees: The SCDHEC charges fees for environmental permits, including application fees (S.C.R. 61-30C(1) and annual fees for NPDES, State Construction Permits, and Land Application Permits. (S.C.R. 61-30G(1)(a))

Transfers/modifications/revocations authorized: Permits are non-transferable except with prior consent of the SCDHEC. A permit may be transferred by the permittee to a new owner or operator, only if the permit has been modified or revoked and reissued, or a minor modification made to identify the new permittee and incorporate such other requirements as may be necessary under Clean Water Act. In addition, any NPDES permit may be transferred to a new permittee if:

- the current permittee notifies the SCDHEC at least 30 days in advance of the proposed transfer day; and
- the notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them.(S.C.R. 61-9.122.61(a)(b))

When the SCDHEC receives any information it may determine whether or not one or more of the causes for modification or revocation and reissuance or both exist. If cause exists, the SCDHEC may modify or revoke and reissue the permit accordingly and may request an updated application, if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. (S.C.R. 61-9.122.62(a)(b)(c))

Public notice/hearing requirements: Public hearings may be conducted by the SCDHEC either of its own volition or upon the request of affected persons. (S.C.C.A. §48-1-150)

On-site Sewage Disposal Systems

Permit requirements: It is unlawful to construct an individual sewage treatment and disposal system unless a valid permit has been issued by the health authority for the specific construction proposed. The system must be constructed in accordance with the permit. The health authority may also require a permit for the repair, extension or alteration of an individual sewage treatment and disposal system, as deemed necessary.
(S.C.R. 61-56.4(B)(1))

Inspection requirements: Any repair, extension or alteration for which a permit has been issued and all newly constructed systems must remain in an exposed condition until final inspection and approval has been granted by the Health Authority. (S.C.R. 61-56.4(C))

Filter requirements: South Carolina does not require the use of septic tank effluent filters for on-site wastewater treatment systems.

Allowance for drainfield areas/size reductions: South Carolina does not allow for drainfield area/size reduction.

Minimum lot size requirements: There is no minimum lot size required for the placement and use of an on-site wastewater system.

Methods to limit use of septic tanks: None

Driller Licensing Requirements

License type: Well drilling licenses must be issued by the South Carolina Environmental Certification Board (SCECB)in one of three well drilling categories – environmental wells, coastal wells, and rock wells – and in one of four classes: A – D. However, a Class A licensee may practice in all three well drilling categories. No person may engage, or offer to engage, in the drilling of wells for which he or she does not possess a license of the proper well drilling category and class. (S.C.C.A. §40-23-320(A))

Exemptions: Licensing requirements do not apply to:

- salaried employees performing duties for which they were trained and hired solely within a federal or state governmental agency;
- persons constructing, opening, or closing wells on their own property;
- persons constructing, opening, or closing exploration borings;
- persons licensed as contractors pursuant to Chapter 11 who drill a borehole for measuring groundwater levels, blasting, or short term dewatering for construction purposes.

(S.C.C.A. §40-23-270)

Minimum licensing requirements:

- Class D: To be licensed as a Class D environmental, coastal, or rock well driller, an applicant must:
    - be at least 18 years of age;
    - pass a written examination approved by the SCECB; and
    - submit an application and pay the prescribed fee.
- Class C: To be licensed as a Class C environmental, coastal, or rock well driller, an applicant must:
    - pass a written examination approved by the SCECB;
    - submit an application and pay the prescribed fee;
    - complete at least one year of experience as an apprentice well driller; primarily spent in installing wells of the well drilling category for which Class C status is sought;
    - possess the necessary drilling equipment or present to the board sufficient evidence to show the applicant has access to the use of this equipment at any time the applicant needs it; and
    - furnish proof of a surety bond for at least $25,000 or in an amount as specified by the SCECB in regulation.
- Class B: To be licensed as a Class B environmental, coastal, or rock well driller, an applicant must:
    - pass a written examination approved by the SCECB;
    - submit an application and pay the prescribed fee;
    - complete at least one year of experience as a Class C employee of a Class B or A well driller; primarily spent in installing wells of the well drilling category for which Class B status is sought;
    - possess the necessary drilling equipment or present to the board sufficient evidence to show the applicant has access to the use of this equipment at any time the applicant needs it; and
    - furnish proof of a surety bond for at least $25,000 or in an amount as specified by the SCECB in regulation.
- Class A: To be licensed as a Class D environmental, coastal, or rock well driller, an applicant must:
    - pass a written examination approved by the SCECB;
    - submit an application and pay the prescribed fee;
    - complete at least two years in practice as a Class C or Class B well driller in each of the three well drilling categories;

- possess the necessary drilling equipment or present to the SCECB sufficient evidence to show the applicant has access to the use of this equipment at any time the applicant needs it; and
- furnish proof of a surety bond for at least $25,000 or in an amount as specified by the SCECB in regulation.

(S.C.C.A. §40-23-320(B)(C)(D)(E))

Examination required: See minimum licensing requirements above.

Fees required: See minimum licensing requirements above.

Renewal period: A license is valid for up to two years. (S.C.C.A. §40-1-30)

Penalty: The SCECB may revoke, suspend, or otherwise restrict a licensee's right to practice or reprimand or otherwise discipline a licensee for grounds listed in S.C.C.A. §40-23-110(1)-(21). (S.C.C.A. §40-23-110(A))

Appeal process: A party aggrieved by a final action of the SCECB may seek review of the decision. (S.C.C.A. §40-23-160)

Water Well Standards

Well/water well definition: "Well" means any borehole completed for the purpose of extracting or injecting fluid. This includes, but is not limited to, wells used for irrigation, individual residential drinking water, environmental restoration, geothermal well systems, or environmental sampling. (S.C.R. 61-71(B)(32))

Permit type:

Construction: A construction permit must be obtained from the SCDHEC prior to the commencement of drilling operations. (Water Systems Council: State Well Codes: South Carolina; www.watersystemscouncil.org/wellcodes/index.cfm)

Construction standards

Casing requirements: Casings may be driven, lowered, or installed in any manner that will create a continuous water tight and plumb installation. A well point, drive pipe, or drive shoe must be structurally suitable to prevent rupture during the driving of the casing. Permanent well casings must be new, seamless, or electric-resistance welded steel or galvanized pipe or thermoplastic pipe. Casings must have watertight joints that are glued or threaded and coupled if plastic. Casings must meet American Society Testing Materials standards and be National Sanitation Foundation (NSF) approved.
(S.C.R. 61-71(F)(9)(a))

Grouting requirements: For residential and irrigation wells, the diameter of the drilled hole must be large enough to allow for a minimum of 1.5 inches of annular space on all sides of the casing for forced injection of grout through a tremie pipe. Grout must fill the entire annular space from a minimum depth of 20 feet from the land surface at the time of well completion, unless otherwise approved by the SCDHEC. Wells must be grouted in place within five days after borehole completion. (S.C.R. 61-71(F)(2)(a)(c)(e))

Grouting composition: Grout is to be composed of neat cement, a bentonite cement mixture, or high solids sodium bentonite grout. (S.C.R. 61-71(F)(2)(b))

Well reports

Well completion report: A well completion report must be completed and submitted to the SCDHEC by the contractor within 30 days after well completion. In addition to the water well record, the driller must submit additional information as available, such as chemical or bacterial results, if taken, and pumping information.
(S.C.R. 61-71(F)(12)(a))

Well abandonment report: A well abandonment report must be submitted for residential and irrigation wells that are abandoned. (S.C.R. 61-71(F)(12)(b))

Pump installation requirements: Pumps must be designed according to demand and system pressure. Turbine pumps must have casings connected to the pump structure or inserted into the recess at least one inch into the pump base. Turbine pumps must also have casings equipped with flange or sanitary seals. (S.C.R. 61-58.2.(B)(16)(h))

Abandonment requirements: Any well that is removed from service for longer than 36 months must be permanently abandoned, unless a variance is requested.
(S.C.R. 61-71(F)(14)(b))

Procedures: When any well is removed from service the well must be sealed with a watertight cap or seal. The well must be maintained such that it is not a source or channel of contamination while it is not in service. Abandonment must be forced injection of grout or pouring through a tremie pipe starting at the bottom of the well or fill material and proceeding to the surface in one continuous operation. When an individual residential well or irrigation well is permanently abandoned, at a minimum, the well may be filled with either bentonite-cement, neat cement, 20 percent high solids sodium bentonite grout, sand, or gravel to no closer than 20 feet below the ground surface. The remaining 20 feet to the ground surface must be filled with neat cement, bentonite-cement, or 20 percent high solids sodium bentonite grout. (S.C.R. 61-71(F)(14)(a)(d)(e))

Penalties

Civil: Any person violating any of the provisions of this chapter, or any rule or regulation, permit or permit condition, final determination or order of the SCDHEC, shall be subject to a civil penalty not to exceed $10,000 per day of such violation. (S.C.C.A. §48-1-330)

Criminal: A person who willfully or with gross negligence or recklessness violates a provision of this chapter or a regulation, permit, permit condition, or final determination or order of the department is guilty of a misdemeanor and, upon conviction, must be fined not less than $500 or more than $25,000 for each day's violation or be imprisoned for not more than two years, or both. (S.C.C.A. §48-1-320)

State Case Law

Unconstitutional takings

- *South Carolina Dept. of Highways and Public Transportation v. Balcome*, 345 S.E. 2d 762 (1986): Plaintiffs claim their use and enjoyment of their property for agricultural and recreational purposes had been injured by an alteration of the natural water table by defendants. The defendant claims its actions are allowed under by common law principles governing use of subterranean waters. The Supreme Court ruled that South Carolina's Constitution prohibits uncompensated taking of private property for public use regardless of common law.

TENNESSEE

The Tennessee Department of Environment and Conservation administers the Tennessee Water Quality Control Act. As part of its duties, the Department issues a variety of permits including underground injection control, septic system construction, and general NPDES permits. Tennessee regulations specify use classifications and quality standards for groundwater. The state has a non-regulatory non-point source pollution control program aimed towards agricultural practices. Tennessee relies on best management practices to implement riparian buffers. The state does require posting of a performance bond to demonstrate financial security before a permit may be issued.

General policy:

Policy statement: It is the policy of the state that the people of Tennessee have a right to unpolluted waters and the government of Tennessee has an obligation to take all prudent steps to secure, protect, and preserve this right. It is further declared that the policy of the state is to abate existing water pollution, to reclaim polluted waters, to prevent the future pollution of the waters, and to plan for the future use of the waters so that the water resources of the state might be used and enjoyed to the fullest extent consistent with the maintenance of unpolluted waters. (T.C.A. §69-3-102(a)(b) (2001))

Responsible agency: The Department of Environment and Conservation (TDEC) is the water quality control agency for the State of Tennessee. (T.C.A. §69-3-107(8))

Type of water quality standards employed: Use classification and quality criteria for groundwater are established in TDEC Rule 1200-4-3-.07 (2004) and TDEC Rule 1200-4-3-.08 (2004).

Non-point source pollution: The Tennessee Department of Agriculture (TDA) administers the state's non-point source pollution control program. This program addresses non-point source water pollution from the following three aspects: education and public awareness, best management practices (BMP) implementation, and water quality monitoring.
(http://www.state.tn.us/agriculture/nps/npsdoc/progmgmt.pdf)

Permit types

Underground injection control permit: Anyone who discharges industrial/commercial wastes into a subsurface system other than city sewers or who discharges stormwater to an improved sinkhole is required to submit an underground injection control permit application. The TDEC permits Class I and V wells. Class IV wells are illegal. Class II wells are permitted by USEPA. There are no Class III wells in Tennessee. (TDEC Rule 1200-4-6)
(T.C.A. §69-3-101 *et seq*)

Exemptions: The following activities are exempt from TDEC's UIC permitting requirements:

- operation of domestic subsurface fluid distribution systems disposing exclusively of sanitary waste serving less than 20 persons;
- operation of facilities injecting natural gas for the purpose of storage;
- operation of wastewater treatment ponds or lagoons permitted to discharge to surface waters under the National Pollutant Discharge Elimination System (NPDES) permitting program.

Septic system construction permit: Any individual or property owner who desires to have a subsurface sewage disposal (septic) system installed on their property or requiring repair to an existing faulty system must get a Septic System Construction Permit. (TDEC Rule 1200-1-6)(T.C.A.§68-221-401 *et seq*.)

General NPDES permit for discharges of treated groundwater associated with underground storage tank remediation: Any individual who discharges groundwater associated with remediation of contaminated groundwater at an underground storage tank must obtain an NPDES permit for such discharge. (T.C.A. §69-3-198)

Decision maker: The Tennessee Department of Environment and Conservation issues permits in Tennessee. (T.C.A. §69-3-107)

Criteria for issuance: The TDEC may grant permits that impose such conditions, including effluent standards and conditions and terms of periodic review, as are necessary to accomplish the purposes of the Act. (T.C.A. 69-3-108(e))

Buffer required: The *Tennessee Erosion & Sediment Control Handbook* provides a guide for the protection of state waters through the use of best management practices during land disturbing activities. These BMPs must be designed, installed, and maintained during land disturbing activities. Specification for general buffers and vegetated riparian buffers are included in design specifications.
(http://www.state.tn.us/environment/wpc/sed_ero_controlhandbook/2.%20Vegetative%20Practices.pdf)

Bond required: No person shall construct, operate or holdout to the public as proposing to construct or operate a sewerage system, unless such person first provides a bond or other financial security to the Department, and has received approval of the same. The Board may by regulation establish the amount and form of such bond or financial security for various sizes and types of facilities. In no case shall the amount of the bond or financial security exceed $75,000. The purpose of the bond or financial security shall be the protection of the public health, welfare, and the environment of the state. (T.C.A. §69-3-122(a)(b))

Permit duration: Permits shall include a definite term, not to exceed five years. This term shall be subject to provisions for modification, revocation or suspension of the permit.
(T.C.A. §69-3-108(e)(2))

Unauthorized discharge reporting requirements: The permittee shall report any noncompliance which may endanger health or the environment, including:

- any monitoring or other information which indicates that any contaminant may cause an endangerment to underground sources of drinking water (USDWs); or
- any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

This information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 72 hours of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. (TDEC Rule 1200-4-6-.08)

Fees: Application fees are required for most permits. Annual fees are required for NPDES permits. (TDEC Rule 1200-04-11)

Transfers/modifications/revocations authorized: The TDEC may revoke, suspend, or modify any permit for cause, including:

- violation of any terms or conditions of the permit or of any provision of the Water Quality Control Act;
- obtaining the permit by misrepresentation or failing to disclose fully all relevant facts; or
- a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. (T.C.A. §69-3-108(f))

Permits are transferable upon the approval of both parties and the TDEC.

Public notice/hearing requirements: Hearings are not required, but may be held.
(T.C.A. §69-3-110)

On-site Sewage Disposal Systems

Permit requirements: No property owner of a subsurface sewage disposal system may construct, alter, extend, or repair subsurface sewage disposal systems within Tennessee unless that person holds a valid construction permit issued by the Commissioner of the TDEC. (TDEC Rule 1200-1-6.05(1))

Inspection requirements: No system may be covered without the inspection and authorization of the TDEC. (TDEC Rule 1200-1-6-.06(5))

Filter requirements: The state allows the use of septic tank effluent filters for on-site wastewater treatment systems, but they are not required. (TDEC Rule 1200-1-6-.09(1))

Allowance for drainfield areas/size reductions: Tennessee allows for drainfield area/size reduction based on the technology and media, e.g., chambers and EZ Flow, and advanced treatment systems. (National Small Flows Clearinghouse Regulations Database: http://www.nesc.wvu.edu/nsfc/pdf/summaries/TENNESSEE.PDF)

Minimum lot size requirements: There are no minimum lot size requirements in Tennessee.

Methods to limit use of septic tanks: None

Driller Licensing Requirements

License type: Well drillers are required to be licensed in Tennessee. (T.C.A. §69-11-102(a))

Exemptions: None found.

Minimum licensing requirements: Applicants for driller's and installer's licenses must meet the following requirements:

- be at least 18 years of age;
- have a minimum of two years experience, prior to the date of application, working in the operation for which a license is being sought;
- complete grade 10 in high school or submit proof of equivalent achievement demonstrated by successful completion of approved short courses or written examinations. Up to four years of full-time employment may be substituted for equal years of education. This is in addition to the experience requirements in paragraph (2); and
- Pass an examination as prescribed by the Board of Groundwater Management.

(TDEC Rule 1200-4-9-.02)

Examination required: Applicants admitted to the written examination will be required to take a general examination related to borehole construction standards and related subjects including basic groundwater hydrology. All applicants will be required to take one or more specialty examinations designed to test the competence and ability of the applicant to perform the work of a driller or installer. (TDEC Rule 1200-4-9-.05(3)) A minimum grade of 70 percent on the general and any other specialty exam category is required to pass the written exam. (TDEC Rule 1200-4-9-.05(6)

Fees required: Application, annual, and renewal fees are required.
(TDEC Rule 1200-4-9-.04(2); 1200-4-9.06(2))

Renewal period: Annually. (TDEC Rule 1200-4-9-.06(1)(d))

Penalty: The Commissioner of the TDEC may suspend or revoke a license and/or refuse to issue or renew a license, if he or she finds that the applicant or holder of such license:

- has intentionally made a material misstatement in the license application;
- has willfully violated any provision any rule or regulation promulgated under Chapter 1200;
- has obtained or attempted to obtain, such license by fraud or misrepresentation;
- has been guilty of fraudulent or dishonest practices;
- has demonstrated a lack of competence as a driller of wells;
- has failed to comply with an order or assessment issued by the Commissioner; or
- has been convicted of a felony. (TDEC Rule 1200-4-9-.07(1))

Appeal process: Any person whose application is denied for any reason may request a review of the denial in accordance with the provisions of the Uniform Administrative Procedures Act by filing that request with the Commissioner of the TDEC within 30 days of receipt of the denial. (TDEC Rule 1200-4-9-.09)

Water Well Standards

Well/water well definition: "Water well" means a hole drilled into the earth, by boring or otherwise, for the production of water. "Well" means on the three types of holes in the earth: geothermal well, a monitoring well, or a water well. (TDEC Rule 1200-4-9-.01(50)(51))

Permit type:

Construction: A notice of intent to drill a water well must be submitted by the property owner or the licensed well driller to the Director of TDEC's Division of Water Supply before beginning operations at the drill site. (TDEC Rule 1200-4-9-.10(c))

Construction standards

Casing requirements: Wells drilled for the production of water must be cased with watertight casing extending from at least 19 feet below the land surface to a minimum of six inches above land surface. Casing constructed in consolidated rock is to be seated below rocks with inferior water or at least five feet below solid bedrock. Casing in unconsolidated rock must extend to at least the top of the aquifer/rock or to 19 feet if greater. Casing may have screen attached to the bottom or the lowermost feet of casing may be slotted or perforated. If water is obtained from overburden above consolidated rock, then the casing must be set just above the consolidated rock.
(TDEC Rule 1200-4-9-.10(5)(a))

Grouting requirements: The annular space from a depth of three feet to ten feet below the surface must be backfilled with cement or bentonite grout. Bentonite grout, tablets, or chips must be approved and meet National Sanitation Foundation 60 or 61 or American National Standards Institute standards. The remaining annular space must be filled with impervious materials like cement, bentonite, sand, puddle clay, or cuttings. The top of backfill material is to remain level with the land surface surrounding the well.
(TDEC Rule 1200-4-9-.10(6)(b))

Grouting composition: The grout material used in the backfilling or grouting of a water well must consist of a mixture of Portland Class A cement or quick setting cement in a ratio of not over six gallons of water per 94 pound sack of cement, or a high solids mixing bentonite grout with a minimum of 20 percent solids and a weight of no less than nine and two tenths pounds per gallon as measured by a standard mud balance. (TDEC Rule 1200-4-9-.10(6)(a))

Well reports

Well completion report: Every well driller, within 60 days after completion of a water well, must submit a report on the construction of the well to the TDEC.
(TDEC Rule 1200-4-9-.10(1)(b); 1200-4-9-.15)

Well abandonment report: Every well driller or person holding a well closure license, within 60 days of abandonment of a water well, must submit a report of the abandonment of the well or borehole to the Department. The report must include the same information as required on the completion report and must include specific information on how the well was closed and the placement and type of backfill placed in the well bore. The abandonment report must be signed by the licensed driller or person holding a well closure license. All well closure reports must include a diagram showing the location and distance in feet of the closed well from one specific landmark and septic system or sewer system on the property. (TDEC Rule 1200-4-9-.10(1)(j))

Pump installation requirements: The capacity of the pump must be consistent with the intended use and yield characteristics of the well. The pump and related equipment for the well must be conveniently located to permit easy access and removal for repair and maintenance. The base plate of a pump placed directly over the well must be designed to form a watertight seal with the well casing or pump foundation. In installations where the pump is not located directly over the well, the annular space between the casing and pump intake or discharge piping must be closed with a watertight seal designed specifically for this purpose. All pressure tanks must be installed above ground unless the tank is specifically designated by the manufacturer for below ground burial. (TDEC Rule 1200-4-9-.11)

Abandonment requirements: The driller or person holding a license for well closure must backfill and close any newly drilled water well not intended for use in which casing has not been installed or from which casing has been removed, within 15 days after the drill rig leaves the site. The driller must take all steps necessary to maintain safety around the site until the closure process is completed. (TDEC Rule 1200-4-9-.16(1))

Procedures: Prior to closing any well, the driller must:

- remove all equipment or material that may obstruct access to the bottom of the well;
- check the entire depth of the well for obstructions that may interfere with sealing operations and remove them; and
- thoroughly chlorinate the well prior to sealing by the addition of sufficient quantities of liquid bleach or dry hypochlorite granules to produce a free chlorine residual of 25 parts per million. (TDEC Rule 1200-4-9-.16(1)(a)(b)(c))

Penalties:

Civil: Any person who does any of the following acts or omissions is subject to a civil penalty of up to $10,000 per day for each day during which the act or omission continues or occurs:

- violates an effluent standard or limitation or a water quality standard established under this part;
- violates the terms or conditions of a permit;
- fails to complete a filing requirement;
- fails to allow or perform an entry, inspection, monitoring, or reporting requirement;
- violates a final determination or order of the board, panel or commissioner;
- in the case of an industrial user of a publicly owned treatment works, fails to pay user or cost recovery charges or violates pretreatment standards or toxic effluent limitations established as a condition in the permit of the treatment works;
- after reasonable notice and opportunity to restore a ditch the owner of the property fails to restore the ditch to permit specifications; or
- violates any other provision of this part or any rule or regulation promulgated by the board. (T.C.A. §69-3-115(a)(1))

Criminal: Any person unlawfully polluting the waters of the state or violating or failing, neglecting, or refusing to comply with any of the provisions of this part, commits a Class C misdemeanor. Each day upon which such violation occurs constitutes a separate offense. Any person who willfully and knowingly falsifies any records, information, plans, specifications, or other data required by the board or the commissioner, or who willfully and knowingly pollutes the waters of the state, or willfully fails, neglects or refuses to comply with any of the provisions of this part commits a Class E felony and shall be punished by a fine of not more than $25,000 or incarceration, or both. (T.C.A. §69-3-114(b))

State Case Law

Nuisance

- *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part* 855 F.2d 1188 (6th Cir. 1988): Plaintiffs seek damages for personal injury and their property due to contamination of their home wells by hazardous chemicals from Velsicol's burial site. The court found that the location, creation, operation, closure and maintenance, of Velsicol's chemical waste burial site containing highly toxic and ultrahazardous chemicals immediately adjacent to plaintiffs' properties created a common

law private nuisance. Furthermore, Velsicol's acts in creating such a private nuisance were a proximate cause of plaintiffs' injuries which included the interference with plaintiffs' right to the uninterrupted enjoyment of their lives and property.

Negligence

- *Sterling v. Velsicol Chem. Corp*., 647 F. Supp 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part* 855 F.2d 1188 (6th Cir. 1988): Plaintiffs seek damages for personal injury and their property due to contamination of their home wells by hazardous chemicals from Velsicol's burial site. Because Velsicol had a duty to protect others from unreasonable harm arising from the dumping of the chemicals on its farm and breached this duty, it is guilty of common law negligence in the creation, implementation, operation and closure of its chemical waste burial site.

Strict Liability

- *Sterling v. Velsicol Chem. Corp*., 647 F.Supp. 303 (W.D.Tenn. 1986), *aff'd in part, rev'd in part on other grounds* 855 F.2d 1188 (6th Cir. 1988). Plaintiffs seek damages for personal injury and their property due to contamination of their home wells by hazardous chemicals from Velsicol's burial site. The court found that Velsicol was carrying on an abnormally dangerous activity when it created, implemented, operated and closed its chemical waste burial site, and that the operation of such an abnormally dangerous activity by Velsicol makes Velsicol strictly liable to the plaintiffs for all injuries caused thereby.

Trespass

- *Sterling v. Velsicol Chem. Corp*., 647 F.Supp. 303 (W.D.Tenn. 1986), *aff'd in part, rev'd in part on other grounds* 855 F.2d 1188 (6th Cir. 1988). Plaintiffs seek damages for personal injury and their property due to contamination of their home wells by hazardous chemicals from Velsicol's burial site. Velsicol is guilty of trespassing upon the property of plaintiffs by the allowance of the escape of their toxic and hazardous chemicals from their waste burial site to the property of the plaintiffs.

COMPARISON OF WATER RESOURCE PLANNING LAWS

Water resource planning programs are implemented at many levels of government. Federal water resource planning has traditionally involved major public works projects and programs. Agencies such as the Corps of Engineers have planned for reservoirs, power projects, flood control projects, and navigation improvements.

States also conduct an array of water resource planning activities. Some state statutes require the preparation of comprehensive water resource management plans. State law may also require agencies to develop strategic or program plans. Plans can focus on water supply or water quality. States develop source-specific plans that address a particular resource, such as an aquifer or river basin.

In addition to state-mandated plans and planning programs, states are often engaged in planning in response to federal requirement. The Clean Water Act (CWA) and the Safe Drinking Water Act contain requirements for states to develop plans or implement planning programs. Examples include areawide waste management plans, the CWA §313 continuous planning program, source water protection planning and wellhead protection planning. State water quality control agencies must develop program plans to maintain delegation and/or to receive financial assistance

Local governments and coalitions of local governments (regions) generally include water resource provisions in two types of plans. Many local governments provide water supply or wastewater management services. These governments prepare service delivery plans for construction, operation and maintenance of infrastructure and systems. Local governments are also usually required to consider water resources in land use planning or zoning/development plans. Laws in some states require regional development agencies to consider water resources in their planning activities.

Kundell and others developed a classification system for state water resource planning depending on the focus of plan. (Kundell, James E., DeMeo, Terry A., and Myszewski, Margaret, 2000. *Developing a Comprehensive State Water Management Plan: A framework for Managing Georgia's Water Resources*. Atlanta: Research Atlanta, Inc.) Plans vary by scale and type of resource managed. For purposes of this report, plans are classified into the following categories:

- Service development plans are associated with providing a service, such as water supply or wastewater management. While these plans are commonly developed by local governments to implement their service delivery strategies, some state governments also prepare these plans. State plans focus on goals such as expansion of public water supply or wastewater management services through public or private means.

- Agency water plans can be strategic plans or program management plans. They generally contain goals, objectives and performance measures. These plans focus primarily on administrative aspects, not on the resources being managed. Water resource programs within state agencies commonly prepare this type of plan for administration of federally-delegated programs. In general, no state laws or regulations require the development of these plans.

- Resource plans usually consider either water supply or water quality at various scales. Unlike agency plans, resource plans primarily focus their outcomes on improving the resource. River basin management plans provide a good example of resource plans. Many states implement their water quality management responsibilities through basin management approaches, but few of these approaches are actually required by state law.

- Comprehensive water plans are statewide in nature and address both water quality and water quantity issues for surface waters and groundwater. These plans are usually quite effective at coordinating the roles of multiple agencies engaged in various aspects of water resources-related management. They also provided significant opportunities for public participation.

The following matrices and accompanying discussion provide details on the provisions of state laws requiring water resource management planning at the state, regional and local levels of government. This information does not include federal requirements imposed on state, regional or local agencies nor planning programs associated with local land use requirements or zoning that provide limited consideration of water resources.

Table 7. Comparison of Water Resource Management Planning Laws: State Planning

	Alabama	Florida[1]	Georgia[2]	Kentucky	Mississippi[3]	North Carolina[4]	South Carolina[5]	Tennessee
Year enacted		**1972**	**2004**		**1985**	**1989**	**1967**	
Year last amended		**1999**			**1995**	**2003**	**1985**	
Type of Plan								
Service development plans								
Agency plans					**X**	**X**		
Resource plans					**X**	**X**		
Comprehensive water plans		**X**	**X**				**X**	
Vision statement included		**Y**	**Y**		**N**	**Y**	**N**	
Goals specified		**N**	**N**		**N**	**N**	**Y**	
Planning horizon specified		**N**	**N**		**N**	**Y**	**N**	
Lead agency designated								
State environmental regulatory agency		**X**	**X**		**X**	**X**		
Other state agency							**X**	
Multi-agency/committee								
Scope								
Water quantity		**X**	**X**		**X**	**X**	**X**	
Water quality		**X**	**X**		**X**	**X**	**X**	
Surface water		**X**	**X**		**X**	**X**	**X**	
Groundwater		**X**	**X**		**X**	**X**	**X**	
Minimum content specified		**Y**	**N**		**Y**	**Y**	**N**	
Implementation requirements		**Y**	**Y**		**N**	**N**	**N**	
Interagency cooperation mechanism included		**Y**	**Y**		**Y**	**N**	**N**	
Plan approval								
Administrative		**Y**	**Y**		**Y**	**Y**	**Y**	
Legislative			**Y**					
Revision timeframe specified		**Y**	**Y**		**N**	**Y**	**N**	
Performance measures included		**Y**	**N**		**N**	**N**	**N**	

[1] Fla. Stat. Ann. §§ 373.036 and 373.061 (West 2000 and Supp. 2004)
[2] O.C.G.A. §§ 12-5-520 through 12-5-525 (Lexis 2004)
[3] Miss. Code Ann. §§ 51-3-21 (West 1999)
[4] N.C. Gen. Stat. Ann. §§ 143-355, 143-215.73A, and 143-215.8B (Lexis 2003)
[5] S.C. Code Ann. §§ 49-3-40 and 49-23-30 (Lexis Supp. 2003)

Table 8. Comparison of Water Resource Management Planning Laws: Regional Planning

	Alabama	Florida[1]	Georgia[2]	Kentucky[3]	Mississippi[4]	North Carolina[5]	South Carolina	Tennessee
Year enacted		**1972**	**2001**	**1986**	**1995**	**1997**		
Year last amended		**2004**	**2004**	**2000**				
Type of Plan								
Service delivery plans			**X**	**X**				
Resource plans		**X**			**X**	**X**		
Timeframe provided		**Y**	**Y**	**Y**	**N**	**N**		
Lead agency designated								
Regional council						**X**		
Regional authority				**X**	**X**			
District		**X**	**X**					
Scope								
Water quantity		**X**	**X**	**X**	**X**	**X**		
Water quality		**X**	**X**	**X**	**X**	**X**		
Surface water		**X**	**X**	**X**	**X**	**X**		
Groundwater		**X**	**X**	**X**	**X**			
Minimum content specified		**Y**	**Y**	**Y**	**N**	**Y**		
State guidance provided		**Y**	**N**	**Y**	**N**	**N**		
State plan consistency required		**N**	**N**	**N**	**N**	**N**		
Public involvement process required		**Y**	**Y**	**N**	**N**	**Y**		
Plan approval								
Board/council/committee		**X**	**X**	**X**	**X**	**X**		
State agency		**X**			**X**	**X**		
Legislative								
Revision timeframe specified		**Y**	**Y**	**Y**	**N**	**N**		
Performance measures included		**N**	**N**	**N**	**N**	**Y**		

[1] Fla. Stat. Ann. §§ 373.036 and 373.0361 (West 2000 and Supp. 2004)
[2] O.C.G.A. §§ 12-5-570 et seq (Lexis 2001)
[3] Ky Rev. Stat. §§ 151.700 et seq (Michie 2001)
[4] Miss. Code Ann. § 51-8-65 (West 1999)
[5] N.C. Gen. Stat. Ann. § 143-215.14 (Lexis 2003)

Table 9. Comparison of Water Resource Management Planning Laws: Local Planning

	Alabama	Florida	Georgia	Kentucky[1]	Mississippi	North Carolina[2]	South Carolina	Tennessee
Year enacted				**1990**		**1989**		
Year last amended				**2000**		**2003**		
Type of Plan								
Service delivery plans				**X**		**X**		
Resource plans						**X**		
Timeframe provided				**Y**		**Y**		
Planning agency								
County				**X**		**X**		
Municipality						**X**		
Scope								
Water quantity				**X**		**X**		
Water quality				**X**				
Surface water				**X**		**X**		
Groundwater				**X**		**X**		
Minimum content specified				**Y**		**Y**		
State guidance provided				**Y**		**Y**		
State plan consistency required				**N**		**N**		
Public involvement process required				**Y**		**N**		
Plan approval								
Board/council/committee				**Y**		**Y**		
State agency				**Y**				
Revision timeframe specified				**Y**		**Y**		
Performance measures included				**N**		**N**		

[1] Ky Rev. Stat. §§ 151.114 through 151.118 and §§ 151.601 through 151.607 (Michie 2001)
[2] N.C. Gen. Stat. Ann. § 143-355 (Lexis 2003)

ANALYSIS OF STATE, REGIONAL, AND LOCAL WATER RESOURCES MANAGEMENT PLANNING LAWS AND REGULATIONS

ALABAMA

Alabama laws contain no specific requirements for the development of a state, regional or local water resources management plan. Under its general statutory authority, the Office of Water Resources in the Alabama Department of Economic and Community Affairs has developed a drought management plan (A.C. §9-10B-5). The plan provides a mechanism to identify drought-impacted areas, as well as ways to prevent or mitigate drought impacts.

FLORIDA

Florida law provides for the development of a comprehensive state water plan and district water plans for each of the five water management districts. Plans must address water supply, water quality, flood protection and floodplain management and natural systems. District water plans must identify water supply planning regions, areas where existing and projected demands exceed supply. If a water management district identifies a water supply planning region, state law and regulations require the development of a regional water supply plan to address supply shortfalls. Districts may also require individual water users to prepare conservation plans for submission in conjunction with a consumptive use permit application. The Water Resource Implementation Rule (F.A.C. Sections 62-40.110 *et seq.*) elaborates on the implementation of statutory water resource planning requirements.

Type of plan: State and district plans are comprehensive water resource management plans.

Timeframe provided: District plans and regional water supply plans must address a 20-year planning horizon. (F.S. §§373.036 and 373.0361) Since these plans form part of the state water plan, that plan also includes the 20-year planning horizon.

Lead agency designated: State law designates the Florida Department of Environmental Protection (FDEP) as the lead planning agency. District plans and regional water supply plans are prepared by the five water management districts (Northwest Florida Water Management District, South Florida Water Management District, Southwest Florida Water Management District, St. Johns River Water Management District, and Suwannee River Water Management District).

Scope: Plans must address water supply, water quality, flood protection and floodplain management and natural systems. (F.S. §§373.036 and 373.0361) Plans address surface water and groundwater sources.

Minimum content specified: The state water plan must include:

- programs and activities of the FL DEP related to water supply, water quality, flood protection and floodplain management, and natural systems;
- the FDEP water quality standards;
- district water management plans;
- performance measures;
- the Water Resource Implementation Rule;
- overview of the FDEP programs, including a discussion of their interrelationships with water management district programs;
- water management goals and responsibilities in water supply management, flood management, water quality management, and natural systems management;
- statewide water management implementation strategies for each area of responsibility;
- intergovernmental coordination efforts;
- description of the plan development process, including public participation;
- methods for assessing effectiveness of water resource management programs and plan implementation;
- linkages to rulemaking, budgeting, program development, and legislative proposals; and
- funding strategies to implement the programs. (F.A.C. 62-40.510)

District plans must contain the following content:

- overview of the district;
- water management goals;
- description of water management responsibilities for water supply management (source protection and regional water supply planning), flood protection and floodplain management, water quality management (surface water and groundwater), and natural systems management (establishment of minimum flows and levels);
- for each water management responsibility:
  - Resource assessments;
  - Water management policies for identified issues and problems; and
  - Implementation strategies for each issue and problem.
- integrated plan describing how the water problems of each county are addressed;
- intergovernmental coordination measures; and
- description of the plan development process, including public participation.

(F.A.C. 62-40.520)

Regional water supply plans must contain the following content:

- water supply development component;
- water resource development component;
- recovery and prevention strategy for adopted minimum flows and levels;
- funding strategy;
- description of how water supply development and water resource development options serve the public interest;
- technical data and information;
- minimum flows and levels;
- reservations of water for protection of fish and wildlife or human health and welfare; and
- the need for use of variance provisions to create water supply or water resource development. (F.S. §373.0361)

Implementation requirements: The state and district plans must include implementation measures. See list of minimum content, above.

Interagency cooperation mechanism included: The state and district plans must include intergovernmental coordination measures. See list of minimum content, above.

Plan approval: The state plan must be approved by the Secretary of the Florida Department of Environmental Protection. If the plan necessitates a change in the Water Resource Implementation Rule, the secretary must submit the adopted rule to the President of the Senate and the Speaker of the House of Representatives. The rule will not become effective until after the next legislative session. The planning law contains no provision requiring legislative action on the rule. (F.S. §373.036)

District plans must be approved by the governing board. The approved plan is submitted to the FL DEP for review. The FL DEP may accept the plan or recommend changes to the governing board. The law requires the governing board to accept the recommendations or provide specific reasons for lack of acceptance. State regulations provide, "A District Water Management Plan is intended to be a planning document and is not self-executing." (F.A.C. 62-40.530)

Revision timeframe specified: The state plan must be updated every five years, but the FDEP must prepare an annual report on the implementation status. (F.A.C. 62-40.510) District plans must also be updated every five years. (F.S. §373.036) Districts are also required to prepare annual status reports. (F.A.C. 62-40.520)

Performance measures included: The state and district plans must include performance measures and/or benchmarks. See list of minimum content, above.

State guidance provided for regional/local planning: The Florida Administrative Code provides regulations for the development of district plans and regional water supply plans. (F.A.C. 62-40.520 and 62-40.531) The Office of Water Policy also provides additional guidance.

State plan consistency required for regional/local plans: State law requires the inclusion of district plans within the state plan. (F.S. §373.036) In considering whether to accept a district plan, the FL DEP must "review each Plan for consistency with this chapter [Water Resources Implementation Rule]." (F.A.C. 62-40.530)

Public involvement process required: The state and district plans must include a description of the planning process, including public participation efforts. See list of minimum content, above. State regulations also require districts to hold workshops in conjunction with their plan development efforts. (F.A.C. 62-40.520)

GEORGIA

Georgia has recently adopted its state water resource management planning requirements. The provisions of the new law require the development of a comprehensive plan that addresses water quantity/use and water quality issues for surface water and groundwater. Preparation of the initial plan, which is due by July 1, 2007, is now underway. The requirement to develop a comprehensive plan has supplanted requirements to develop and implement river basin management plans.

On a regional basis, the Georgia General Assembly adopted legislation creating the Metropolitan North Georgia Water Planning District (MNGWPD), to represent a 16-county Metropolitan Atlanta area. The 2001 law provides for the MNGWPD to develop plans for stormwater management, wastewater management, and water supply and conservation. By November 2003, the MNGWPD had developed its initial plans.

Type of plan: Georgia law contemplates the development of a comprehensive state plan. The MNGWPD plans are primarily resource management plans, but do include some service delivery components.

Vision statement included: State law includes the following policy statement to guide development of the plan, "Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens." (O.C.G.A. §12-5-522 (Supp. 2004))

Lead agency designated: State law designates the Environmental Protection Division of the Georgia Department of Natural Resources (GAEPD) as the lead planning agency. (O.C.G.A. §12-5-522 (Supp. 2004)) State law also creates a Water Council composed of state officials from water resource management agencies to help guide the development of the plan.
(O.C.G.A. §12-5-524 (Supp. 2004))

The MNGWPD is charged with the development of the regional plans.
(O.C.G.A. §12-5-572 (Supp. 2004))

Scope: The state plan must address water quantity and water quality issues for both surface water and groundwater. (O.C.G.A. §12-5-522 (Supp. 2004)) State law charges the MNGWPD with the development of a district-wide watershed management plan, a short-term and long-term wastewater management plan, and a water supply and conservation plan.
(O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

Minimum content specified: No minimum content is specified for the state plan. Minimum content requirements for the watershed management plan developed by MNGWPD include:

- methodologies for monitoring water quality and maintaining collected data;
- descriptions of current pollutant loads by source;
- forecasts of potential future pollutant load increases;
- identification of water bodies requiring total maximum daily loads and provisions for incorporating total maximum daily loads into plans;

- establishment of priorities for protecting watershed resources;
- identification of specific control strategies to maintain water quality standards;
- model ordinances for stormwater management;
- recommended changes to state or local laws, regulations, or ordinances necessary to implement the plans;
- a timetable for implementation of plans, including annual, measurable milestones;
- estimates of costs and identification of potential sources of funding;
- education and public awareness measures; and
- establishment of short-term and long-term goals.

(O.C.G.A. §12-5-582 (Supp. 2004))

The specified minimum content for wastewater management plans includes:

- identification of anticipated wastewater treatment capacity requirements;
- recommended future upgrades/expansions of existing treatment facilities;
- measures to maximize efficiency through multijurisdictional approaches;
- a timetable for phasing out or upgrading existing plants, if appropriate, or constructing new plants;
- an inspection and maintenance program for sewer collection systems;
- an inspection and maintenance program for septic tanks in critical areas;
- identification of appropriate opportunities for gray-water reuse or other technologies to increase wastewater treatment capacity or efficiency;
- education and public awareness measures regarding wastewater management; and
- establishment of short-term and long-term goals. (O.C.G.A. §12-5-583 (Supp. 2004))

Minimum elements of the water supply and conservation plan are:

- a description of current water supply resources and potential limitations;
- projected water supply requirements over a 20-year period;
- identification of opportunities to expand water supply resources;
- an accounting of existing transfers of surface waters in excess of 100,000 gallons per day on an annualized basis across natural basins;
- a water conservation program, including voluntary measures, and measures enforceable through local ordinances;
- education and public awareness measures regarding water conservation; and
- establishment of short-term and long-term goals.

(O.C.G.A. §12-5-584 (Supp. 2004))

Implementation requirements: The GAEPD is directed to make all water withdrawal decisions consistent with the approved plan. Local governments not in compliance with the plan are ineligible for certain grants and loans. (O.C.G.A. §12-5-522 (Supp. 2004))

State law directs local governments to comply with plans produced by the MNGWPD. The Director of the GAEPD may modify permits consistent with the MNGWPD's plans. (O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

Interagency cooperation mechanism included: In developing the draft state plan, the GAEPD must cooperate with the Water Council. (O.C.G.A. §12-5-523 (Supp. 2004)) State law requires the MNGWPD to create coordinating committees and advisory councils to assist in its planning process. (O.C.G.A. §§12-5-580 and 12-5-581 (Supp. 2004))

Plan approval: The final draft of the proposed comprehensive statewide water management plan must be approved by the Water Council, before submission to the General Assembly. Before the state plan can have any force and effect, the General Assembly must ratify the plan by joint resolution. (O.C.G.A. §§ 12-5-524 and 12-5-525 (Supp. 2004))

The regional plans must be approved by the MNGWPD governing board.
(O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

Revision timeframe specified: The GAEPD must review the state plan every three years. (O.C.G.A. §12-5-525 (Supp. 2004)) The MNGWPD is directed to review its plans annually and is required to prepare an updated plan at least every five years. (O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

State guidance provided for regional/local planning: The director of the GAEPD is required to develop standards for the MNGWPD's plans. (O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

Public involvement process required: State law requires the GAEPD to solicit "extensive stakeholder involvement" in the development of the comprehensive plan. (O.C.G.A. §12-5-523 (Supp. 2004)) The law also requires the MNGWPD to hold public meetings on its plans and to provide notice and the opportunity for comment on proposed actions of the board on such plans. (O.C.G.A. §§12-5-582 through 12-5-584 (Supp. 2004))

KENTUCKY

Kentucky has no statutory or regulatory requirement for a state water resources management plan. The Kentucky River Authority (KRA) is authorized to develop plans for the management of the Kentucky River Basin based upon long-range water resource plans submitted by counties. Kentucky law also requires counties to prepare long range water supply plans. Counties must also establish 2020 water management planning councils. To encourage the development of multi-county councils and regionalization, the law tasks area development districts with the coordination of quarterly meetings.

Type of plan: Plans developed under Kentucky law are predominantly service delivery plans. Plans seek to ensure continued service to those already served by water treatment systems and wastewater management systems, as well as to provide service to those people who are unserved or underserved and encourage consolidation of water systems. (K.R.S. §151.603)

Timeframe provided: The unified long-range water resource plan developed by the Kentucky River Authority (KRA) has two planning horizons, a short-range of six years and a long-range of 20 years. (K.R.S. § 151.720) The county water supply plans have a 20-year horizon, but water use forecasts are made for five-year increments. (401 K.A.R. 4:220)

Scope: County water supply plans and water resource plans address water quantity and water quality issues for surface water and groundwater in their infrastructure planning efforts. (K.R.S. §§151.114 through 151.118 and §§151.601 through 151.607; 401 K.A.R. 4:220; and 420 K.A.R. 1:030)

Minimum content specified: Minimum content requirements for the county water supply plans include:

- description of the planning unit;
- establishment of the planning council and planning representative;
- identification of planning objectives and water supply planning conflicts;
- county base map;
- water use, forecast, and infrastructure assessment;
- water supplier source assessment;
- supply adequacy assessment;
- supply/source water protection;
- water resources inventory;
- water supply alternatives, including a primary water supply alternative;
- emergency plans, including water shortage plan and supply contamination response plan;
- water treatment and distribution assessment;
- technical, managerial, and financial capacity of public water systems;
- water supply and wastewater treatment projects;
- technical, managerial, and financial capacity of wastewater treatment systems;
- implementation plan; and
- plan approvals.

(401 K.A.R. 4:220)

The specified minimum content for a county long-range water resource plan is:

- a water supply plan;
- a water shortage response plan;
- a water resources map; and
- a map of all potential pollution sources.

(420 K.A.R. 1:030)

The unified water resource plan for the Kentucky River Basin addresses the following matters:

- physical, chemical and biological conditions in surface water and groundwater;
- construction and operation of projects/facilities for storage and release of water;
- regulation of flows and allocation of supplies of surface water and groundwater;
- protection of public health;
- controls on surface water and groundwater quality;
- economic development;
- improvement of fisheries;
- development of recreational areas;
- abatement of water pollution;
- construction and operation of projects/facilities for floodplain protection;
- control of agricultural and urban non-point source pollution;
- stormwater management;
- encouragement of land management to control erosion;
- the use of water for the generation of hydroelectric power;
- control of withdrawals and diversions of surface water and groundwater;
- commercial and recreational navigation;
- utilization of the Kentucky River lock and dam system;
- relationship of county long-range water resource plans to the authority's unified long-range water resource plan;
- the need for basin-wide/local land and water conservation measures; and
- other matters established by the Environmental and Public Protection Cabinet.

(420 K.A.R. 1:030)

The drought response plan for the Kentucky River basin must contain:

- identification of flow rates in the Kentucky River at which the authority would declare a water shortage watch, a water shortage warning or a water shortage emergency;
- identification of criteria for declaring a water shortage watch, a water shortage warning, or a water shortage emergency persons not using the mainstem Kentucky River;
- development of a methodology for equitably reducing withdrawals, diversions or transfers from the mainstem Kentucky River ;
- identification of alternatives for emergency public water supplies; and
- other matters established by the Environmental and Public Protection Cabinet.

(420 K.A.R. 1:030)

State guidance provided for regional/local planning: Planning requirements are detailed in administrative regulations. (401 K.A.R. 4:220 and 420 K.A.R. 1:030)

Public involvement process required: The KRA must hold a public hearing prior to its adoption of a unified long-range water resources plan. (K.R.S. §151.720)

Plan approval: Counties must submit their long-range water supply plans to the Environmental and Public Protection Cabinet and the Kentucky Infrastructure Authority for approval. (K.R.S. §§151.114 and 151.603) County long-range water resource plans are submitted to the KRA. (420 K.A.R. 1:030) The unified long-range water resource plan for the Kentucky River Basin must be submitted to the Environmental and Public Protection Cabinet for review and comment. (K.R.S. §151.720)

Revision timeframe specified: Kentucky law requires long-range water supply plans to be updated at least every five years; however area development districts and the Kentucky Infrastructure Authority prioritize projects for funding annually.
(401 K.A.R. 4:220 and 420 K.A.R. 1:030)

MISSISSIPPI

Mississippi law provides for the development of a state water management plan. The framework for the first plan was completed in 1995. State law also provides for the development of regional water management plans by joint water management districts; however, no new joint water management districts have been created since the relevant amendments to the law were enacted. (M.C.A. §51-8-65)

Type of plan: The state water management plan is primarily a resource plan, but focuses on the programs and practices of one agency, the Mississippi Department of Environmental Quality.

Vision statement included: No vision statement is included in the state water planning section, but the plan must reflect the policy stated in M.C.A. §51-3-3.

Lead agency designated: State law designates the Commission on Environmental Quality (MCEQ) acting through the Office of Land and Water Resources of the Mississippi Department of Environmental Quality as the lead planning agency. (M.C.A. §51-3-21)

Scope: The state plan must address water quantity and water quality issues for both surface water and groundwater. (M.C.A. §51-3-21)

Minimum content specified: State law does not expressly provide minimum content requirements, but it does require the MCEQ to consider the following factors in developing a plan:

- the attainment of maximum beneficial use of water;
- the maximum economic development potential of the water resources consistent with other uses;
- the control of waters for environmental protection, drainage, flood control and water storage;
- the quantity of water available for beneficial use;
- the prevention of unreasonable uses of water (e.g., free-flowing wells);
- presently exercised domestic or exempted uses/permit rights;
- the preservation/enhancement of water quality;
- state water resources policy as expressed by this chapter; and
- allocation of surface water and groundwater during times of emergency water shortage.

(M.C.A. §51-3-21)

Interagency cooperation mechanism included: State law directs the MCEQ to consult with other federal, state, and local agencies and requires governing boards of water management districts and local governments to cooperate with the MCEQ. (M.C.A. §51-3-21)

Plan approval: The state water management plan must be adopted by the MCEQ.
(M.C.A. §51-3-21)

NORTH CAROLINA

North Carolina law provides for planning at all levels. The North Carolina Department of Environment and Natural Resources prepares a state water supply plan, a water resources development plan, and implements North Carolina's statutory requirement for development of basinwide water quality management plans. The Department also implements the state statutory requirements for a continuous planning process similar to that found in the federal Clean Water Act. At the regional level, state law provides for the development of water quality protection plans by a coalition of local governments. North Carolina statutes also require local governments providing public water service or those planning to provide public water service to develop local water supply plans. Community water systems having 1,000 connections or serving more than 3,000 people must also prepare a local water supply plan.

Type of plan: North Carolina's plans are predominantly service development/delivery and resource management plans.

Planning horizon specified: Local water supply plans which are ultimately compiled to create the state water supply plan have a 20-year planning horizon. The water resources development plan is prepared for a six-year planning horizon. (N.C.G.S. §143-215.73A) The basinwide water quality management plans contain a five-year plan. (N.C.G.S. §143-215.8B)

Lead agency designated: State law designates the Department of Environment and Natural Resources (NCDENR) as the responsible agency for development of the state water supply plans based upon local water supply plans prepared by counties. (N.C.G.S. §143-355) The NCDENR also produces the water resources development plan. (N.C.G.S. §143-215.73A) The law charges the Environmental Management Commission with preparation of basinwide water quality management plans. (N.C.G.S. §143-215.8B) A coalition of local governments forming a non-profit corporation produce local coalition water quality protection plans. (N.C.G.S. §143.214.14)

Scope: Although state and local water supply plans contain some information on wastewater discharges, they focus on water quantity issues related to surface water and groundwater. (N.C.G.S. §143-355) The water resource development plan contains water supply and wastewater projects. The basinwide water quality management plans and the local coalition water quality protection plans plan must address surface water and groundwater quality issues. (N.C.G.S. §§143-215.8B and 143.214.14)

Minimum content specified: State law provides the following minimum requirements for the state water supply plan:

- information and projections required to be included in local plans;
- summary of water conservation and water reuse programs described in local plans;
- summary of the technical assistance needs indicated by local plans; and
- a determination of the extent to which the various local plans are compatible;
- identification of potential conflicts among local plans; and
- acknowledgment of ways to better coordinate local supply programs. .

(N.C.G.S. §143-355(m))

North Carolina law also prescribes the minimum content for the annual water resources development plan as follows:

- projects approved by Congress;
- projects for which the Congress has appropriated funds;
- projects for which grant applications for nonfederal costs of water resource development projects have been submitted;
- projects for which grant applications for small watershed projects have been submitted; and
- projects planned as federal reservoir projects for which local governments are seeking State
- financial assistance.

(N.C.G.S. §143-215.73A)

The law does not provide specifically for the minimum content of basinwide water quality management plans. The plans must include a mechanism for point and non-point sources to reduce pollution loads jointly. If nutrient-sensitive waters are involved, the plan must include a goal to reduce the mass load. (N.C.G.S. §143-215.8B)

The minimum content for a coalition plan includes the following:

- an assessment of water quality and related water quantity management in the affected basin;
- a description of goals/objectives for protection and improvement of water quality;
- a workplan describing proposed water quality protection strategies and an implementation strategy for each;
- a description of the performance indicators/benchmarks used to measure progress; and
- a timetable for reporting to the Commission on progress in implementing the plan.

(N.C.G.S. §§143-215.8B and 143.214.14

Local water supply plans must contain four parts: (1) a water supply system report; (2) a water supply planning report; (3) a water conservation and demand management report; and (4) a section on interbasin transfers. State law also provides the following minimum content for local water supply plans:

- present and projected population, industrial development, and water use within the service area;
- the availability of present and future water supplies;
- an estimate of the technical assistance needed at the local level; and
- current and future water conservation and water reuse programs; and
- a description of how the local government will respond to water shortage emergencies.

(N.C.G.S. §143-355(l))

State guidance provided for regional/local planning: The NCDENR provides extensive guidance in developing local water supply plans. No guidance is available for coalition water quality protection plans.

State plan consistency required: The North Carolina State Water Supply Plan is a compilation of local water supply plans, therefore state and local plans are consistent.

Public involvement process required: A public participation process is not specifically required by statute or regulation; however, the state water resource management planning process includes opportunities for public participation and comment.

Plan approval: The North Carolina Environmental Management Commission approves state, regional and local plans.

Revision timeframe specified: Water resources development plans are developed on an annual basis. Basinwide water quality management plans are governed by a five-year cycle. State law provides no revision period for coalition water quality protection plans. Local water supply plans are required to be revised every five years; therefore, the state water supply plan is on a similar cycle.

SOUTH CAROLINA

In 2004, the South Carolina Board of Natural Resources adopted its second edition of the State Water Plan. The Board approved the plan under its broad authority to assist the Governor and General Assembly in "formulating and establishing a comprehensive water resources policy for the State, including coordination of policies and activities among the state departments and agencies." (S.C.C.A. §49-3-40) There is no provision in law or regulation that specifies details regarding the state process. South Carolina law requires the formulation of a drought management plan, but provides little information about the content or the formulation process. The law further mandates local governments and districts providing public water service to develop local drought response ordinances. If a public water supplier is not authorized to adopt ordinances, the supplier must adopt a local drought response plan.

Type of plan: The South Carolina State Water Plan addresses water quantity and quality issues for surface water and groundwater. Although South Carolina only manages interbasin transfers of surface water and groundwater in capacity use areas, the plan provides comprehensive treatment of water resource issues and therefore can be considered a comprehensive plan.

Goals specified: The State Water Plan specifies 12 water management goals.

Lead agency designated: State law designates the Department of Natural Resources (SCDNR) as the responsible agency for formulating water plans. (S.C.C.A. §49-3-40) The SCDNR is also charged with formulating the state drought mitigation plan. (S.C.C.A. §49-23-30)

Scope: The South Carolina State Water Plan addresses water quantity and quality issues for surface water and groundwater. The plan also addresses related water resource management issues, such as drought mitigation, floodplain management, and interstate cooperation.

Minimum content specified: Neither state law or regulation specify minimum content for the water plan or drought mitigation plan.

Interagency cooperation mechanism included: State law provides for interagency coordination and cooperation in the development of the water plan and the drought mitigation plan.
(S.C.C.A. §§49-3-40 and 49-23-30)

Plan approval: The South Carolina Board of Natural Resources approves both plans.

Revision timeframe specified: No timeframe is specified, but the Board of Natural Resources adopted the first State Water Plan in 1998 and the second edition in 2004.

TENNESSEE

Tennessee currently has no water resource management statutes that specifically require or authorize the development of a state, regional or local plan.

CONCLUSION

To meet the groundwater resource challenges this century, states must take bold steps to preserve and protect their water resources. As the complexity and frequency of conflicts among competing water users increases, common law remedies may prove inadequate. In response to these situations, states must consider further altering common law doctrines through enactment of statutory provisions. Given the diversity of geographic and hydrologic conditions across the southeastern United States, no one-size-fits-all approach is available. States with less developed water withdrawal permitting systems should take heed of successes and failures in neighboring states. Even those states with more extensive withdrawal permitting systems must remain sufficiently aware to modify those systems to meet new challenges.

Given the importance of high quality groundwater sources to the future development of southeastern states, it is imperative that states be more vigilant in efficiently implementing water pollution control and prevention programs. High quality groundwater must be available to support the growing population and expanding economic base. Groundwater and surface water quality standards must be designed to address the interactions between the two resources. As southeastern states move into the future, these important issues must be confronted and decisively addressed.

Comprehensive water resource management planning at federal, state, regional and local governmental levels is essential for the development of sound water policies and effective resource management programs. These broad-based efforts should serve to coordinate stakeholder actions in addressing water allocation and quality issues with regard to surface water and groundwater. They should include meaningful public participation opportunities so that the policies and programs developed truly represent society's values.

This report provides an extensive overview of state groundwater resource management laws in southeastern states. It can serve as the basis for discussions regarding the efficacy of programs and policies. It can also serve as a tool to coordinate water resource management efforts.

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