

Chapter 4: Ground Water Laws

State ground water laws

For many years, state ground water rights law in both Eastern and Western States has been primarily concerned with settling property disputes and resolving well interference conflicts. In settling disputes, the Eastern and Midwestern States have consistently followed one of two common law doctrines: reasonable use and absolute ownership. The *reasonable use* doctrine has only a few restrictions because although the landowner may remove the ground water, he or she must remove and use it in a reasonable manner. The *absolute ownership* doctrine places no restriction on the landowner's right. The landowner can remove as much ground water as he or she can.

Unlike the Eastern and Midwestern States, the Western States adhere to the doctrine of prior appropriation, which is also known as the *first in time, first in right* doctrine. This doctrine considers water to be property of the state. In these states, water is allocated by various priority systems, subject to the state's definition of a beneficial use. Ground water rights may be acquired by obtaining a state appropriation permit. Disputes between ground water appropriators are resolved by requiring the junior appropriator to stop withdrawals when they interfere with those of senior appropriators. However, in many of these states, state engineers will refuse to issue a permit if the proposed appropriation will cause ground water levels to fall beyond the economic reach of senior appropriators because senior appropriators are entitled to a reasonable pumping depth.

Recently, some states have enacted legislation authorizing special ground water regulations in designated critical areas. These regulations aim at the situations of ground water mining (or ground water overdraft) and saline water pollution. Ground water mining is usually caused when ground water withdrawals from the aquifer exceed net recharge. The increase in ground water use for irrigation has led to ground water mining in several Western States and has also been associated with saline water pollution. These critical area laws have a number of general objectives, including slowing or stopping ground water mining, providing administrative means for solving well interference conflicts, and protecting existing irrigation-based economies.

In states that designate critical water use areas, criteria for designating critical areas vary from state to state. Generally, they may include withdrawals approaching or exceeding an aquifer's safe yield, decline of ground water level, conflict between users, water quality degradation, and land subsidence. The ground water controls authorized in critical areas vary notably and include—

- requiring state permits for new wells (in states where permits are required only in critical areas);

- restricting ground water supply development through permit denials, well spacing requirements, or well drilling moratoria; and

- reducing use of existing supplies by reducing withdrawals of junior appropriators or of all appropriators, rotating pumping, enforcing voluntary pumping agreements, and purchasing and retiring ground water pumping rights.

In general, state legislatures enact ground water laws to preserve water and ground water. To remedy the water misuse and contamination, all 17 surveyed states give priority to reasonable and beneficial use of ground water and authorize the responsible agency to adopt rules and regulations to implement the ground water acts. Unlike other states, Maryland is unique in that the laws specifically prohibit any municipality, county, or other political subdivision from adopting and enforcing any additional rule or regulations that relate to construction of wells.

All of the surveyed states require the responsible state agencies to provide some sort of regulatory program and plan to preserve ground water. For example, the Mississippi Legislature requires the Commission on Natural Resources to study existing water resources and formulate a state water management plan. Wisconsin is among the states that controls its ground water through a systematic numerical standard regulatory program. The state also sets forth specific provisions regarding the participation of American Indian tribes and bands. Furthermore, the New Mexico Act created an early response team that responds to requests from municipalities or counties for advice and technical assistance concerning alleged releases from underground storage tanks owned or operated by the municipalities or counties.

All 17 states provide some sort of exemption mechanism, whether by allowing exemptions from the general ground water laws or from the specific permit requirements for activities in connection with well construction. For example, Alabama allows several exemptions including surface impoundments constituting solid waste management units under the Resource Conservation and Recovery Act. Mississippi exempts from the permit requirement uses for domestic purposes, for surface water in impoundments that are not located on continuous watercourses, and for water obtained from a well with a surface casing diameter of less than 6 inches.

All 17 states require permits, which generally last for 10 years or less, before engaging in any activities involving ground water. All states set forth regulations concerning wells. The common features of all 17 states' laws concerning wells include: licenses are required for all well drillers and well pumpers; an abandoned well or test hole must be sealed and filled; and records of drilling must be kept.

All states impose civil penalties on violations of the ground water laws and allow enforcing authorities to seek a temporary restraining order or permanent injunction on any individuals who apply for variance from any rules or regulations.

Delaware (region 1).—Delaware Legislature regulates its ground water, in addition to other natural resources such as land, water, and air, through the enactment of the Environmental Control Act.²⁰⁹ Recognizing that it is necessary to protect, conserve and control to assure the reasonable and beneficial use of these resources in the interest of the people of Delaware, the Legislature declares the following state policies:²¹⁰

- The development, use, and control of all the land, water, ground water, and air resources must be directed to make the maximum contribution to the public benefit.

²⁰⁹Environmental Control, DEL. CODE ANN. § 6001 et seq. (1974 & Supp. 1992).

²¹⁰Id. § 6001(b) (1974).

- The State, in the exercise of its sovereign power, acting through the Department of Natural Resources and Environmental Control, should control the development and use of the land, water, ground water, and air resources of the State.²¹¹

Although this act covers other natural resources, the ground water resource will remain the main focus of the following discussion.

Like other State laws, the Delaware Act requires all persons to obtain permits before undertaking any activity that—

causes or contributes to the discharge of a pollutant into any surface or ground water, or

causes or contributes to the withdrawal of ground water or surface water, or

plans or constructs any highway corridor that may cause or contribute to the discharge of an air contaminant or discharge of pollutants into any surface or ground water.²¹²

Furthermore, a permit is also required before anyone can construct, install, replace, modify or use any equipment or device or other article that—

may cause or contribute to the discharge of a pollutant into any surface or ground water,

is intended to prevent or control the emission of air contaminants into the atmosphere or pollutants into surface or ground water, or

is intended to withdraw ground water or surface water for treatment and supply.²¹³

The secretary can establish fees for permits with the concurrence and approval of the General Assembly.²¹⁴ However, since 1992 the secretary has been able to reduce the amount of any fee charged for any permit or license issued depending on the particular types of permits or classes or categories of permittees.²¹⁵

The secretary has the mandatory duty to enforce this chapter.²¹⁶ Violations of the permit requirement of this chapter or any other rules and regulations will result in a civil penalty of between \$1,000 and \$10,000 for each day of violation.²¹⁷ If the violation continues, the secretary may impose a monetary penalty similar to that of the first offense. If the secretary perceives that a violation is threatened to begin, a temporary restraining order or permanent injunction may be applied.²¹⁸ Moreover, the secretary may impose an administrative penalty of not more than \$10,000 for each day of violation²¹⁹ or a cease and desist order.²²⁰ However, before imposing an administrative penalty, the violator is afforded a public hearing.²²¹ In addition,

²¹¹DEL. CODE ANN. § 6001(b) (1974).

²¹²Id. § 6003(a).

²¹³Id. § 6003(b).

²¹⁴Id. § 6003(f).

²¹⁵Id. § 6003(h) (1974 & Supp. 1992). This provision was added by 68 Del. Laws, ch. 348, effective July 10, 1992.

²¹⁶Id. § 6005(a) (1974).

²¹⁷Id. § 6005(b)(1).

²¹⁸Id. § 6005(b)(2).

²¹⁹Id. § 6005(b)(3).

²²⁰Id. § 6018.

²²¹Id. § 6005(b)(3) (1974). For thorough conduction of public hearings, Id. § 6006.

violations and noncompliance may also result in monetary penalties and imprisonment.²²²

Individuals may apply for variance from any rule or regulation promulgated.²²³ The secretary may grant such variance if the secretary finds a number of factors are met, including—

- good faith efforts have been made to comply with this chapter;
- the applicant is unable to comply with the chapter because of unavailability of necessary technology or other alternative methods of control;
- any available alternative operating procedure or interim control measures are being or will be used to reduce the impact; and
- the continued operation of such source is necessary to national security or to the lives, health, safety, or welfare of the citizens of Delaware.²²⁴ A variance is in effect for only 1 year or less and may be renewed.²²⁵

Furthermore, the secretary may grant a temporary variance for less than 60 days²²⁶ if the secretary finds that—

- severe hardship will result from the time involved to seek a longer-period variance;
- the emergency was unforeseeable; and
- all other requirements for obtaining a longer-period variance are met.²²⁷

This temporary variance cannot be extended more than once.²²⁸

Among the above requirements, the Delaware Act specifies the following provisions that are applicable to wells in all areas of the State:

- All persons engaged in the drilling, boring, coring, driving, digging, constructing, installing, removing, or repairing of a water well or water test well must be licensed.²²⁹
- All persons engaged in installing or operating pumping equipment in or for a water well or water test well must be licensed.²³⁰
- Issuance of a license to any water well contractor, pump installer contractor, well driver, well driller, or pump installer is subject to a fee established by the secretary.²³¹

Maryland (region 1).—Maryland Legislature regulates its ground water mainly through its Water and Water Resources law²³² that authorizes the Department of Natural Resources to adopt any regulation to further its general powers of supervision over Maryland's natural resources, and for appropriate conservation of the State ground water.²³³ Before 1982, it also described a number of provisions applicable to

²²²DEL. CODE ANN. § 6013 (1974).

²²³Id. § 6011(a).

²²⁴Id. § 6011(b).

²²⁵Id. § 6011(e).

²²⁶Id. § 6012(a).

²²⁷Id. § 6012(b) (1974).

²²⁸Id. § 6012(c).

²²⁹Id. § 6023(a)(1).

²³⁰Id. § 6023(a)(2).

²³¹Id. § 6026.

²³²MD. CODE ANN., NAT. RES. § 8-101 et seq. (1990 & Supp. 1994).

²³³MD. CODE ANN., NAT. RES. § 8-602.

permits to drill wells, report of driller on completion of work, maintenance of wells, abandonment of wells, waste water, and well drillers. However, these provisions were repealed in 1982²³⁴ and transferred to the Maryland Environment Code.

The Environmental Code has a number of provisions regarding wells. Provisions that are applicable to wells in all areas of the state are as follows:

- The subtitle regarding well drillings denies any municipality, county, or other political subdivision the right to adopt and enforce any additional rule or regulation that relates to constructions of wells.²³⁵
- All persons desiring to drill a well must obtain a permit from the department,²³⁶ which is valid for 1 year.²³⁷
- All well drillers must be licensed by the board.²³⁸
- After completing the drilling of any well, the well driller must file a final report with the department, including—
 - the log of each well,
 - the size and depth of each well,
 - the diameters and lengths of casing and screen installed,
 - the static and pumping levels,
 - the yield of each well, and
 - any other information regarding the construction or operation of the well that the department requires.²³⁹
- Well owners must maintain wells in accordance with the rules and regulations set forth by the department.²⁴⁰
- Upon abandoning any existing well or test hole, well owners must notify the department and effectively seal and fill the well or test hole in accordance with rules and regulations of the department.²⁴¹
- Violations of the provisions regarding wells and other rules and regulations promulgated will result in a fine not exceeding \$500 or imprisonment not exceeding 3 months for the first offense, or both, and a fine not exceeding \$1,000 or imprisonment not exceeding 1 year for a subsequent offense, or both.²⁴² For similar violations, the department may also seek an injunction against such violator.²⁴³

²³⁴Provision regarding well drillers was repealed by Acts 1981, ch. 237, § 1, eff. July 1, 1981. Provisions regarding permit to drill well, driller's report on completion of work, wells' maintenance, wells' abandonment, and waste water were repealed by Acts 1982, ch. 240, § 1, effective July 1, 1982.

²³⁵MD. CODE ANN., ENVIR. § 9-1304.

²³⁶Id. § 9-1306. For the application process and conditions on permits, and fee, see Id. § 9-1307 (1990 & Supp. 1994).

²³⁷Id. § 9-1307(c).

²³⁸Id. § 13-301. For application process, see Id. § 13-303.

²³⁹Id. § 9-1308.

²⁴⁰Id. § 9-1309(a).

²⁴¹Id. § 9-1309(b).

²⁴²Id. § 9-1311(a).

²⁴³Id. § 9-1311(b).

The department has the following mandatory duties and powers:

- To adopt rules and regulations for the construction of wells.²⁴⁴ However, before adopting any rule or regulation, it must submit the proposed rule or regulation to the board for comment.²⁴⁵
- To adopt regulations that require water test results from a well used for domestic purposes to be given to a person who requests the test and to any other person for whose benefit the test is requested.²⁴⁶

Pennsylvania (region 1).—Pennsylvania Legislature regulates ground water partly through the enactment of the Water Well Drillers License Act.²⁴⁷ It recognizes

. . . [ground] water . . . is a renewable natural resource with a great potential for further development; and . . . it is imperative that this resource be developed . . . without waste, to assure sufficient supplies for continued population growth and industrial development"²⁴⁸ Furthermore, it declares that it is the state policy to "take such steps . . . necessary to encourage the orderly development of [ground water] resource and, to this end, it is imperative that persons engaged in water well drilling and the Commonwealth closely cooperate to procure detailed information on the ground water resources."²⁴⁹

The Water Well Drillers License Act provisions that are applicable to wells in all areas of the State are as follows:

- All water well drillers must be licensed. This requirement does not apply to—
a farmer performing any function on any land owned or leased by him or her for farming purposes; or
any natural person drilling a well on land owned by him or her or of which he or she is a lessee and used as his or her residence.²⁵⁰
- The department—the Bureau of Topographic and Geologic Survey in the State Planning Board²⁵¹—may require a well owner to seal effectively or fill any abandoned well on his or her property according to departmental rules and regulations.²⁵²
- Every licensee must put his or her signature on and display license and must have the drilling permits in his or her possession at all times.²⁵³
- Every licensee must keep a record of each well upon a form, setting forth the exact geographic location and log of the well, which must be available to the department upon request.²⁵⁴
- Every licensee must file with the department, within 24 hours of making a contract to drill a water well, a report in the nature of a statement of intention to drill that must include the name and address of the well's owner, the township

²⁴⁴MD. CODE ANN., ENVIR. § 9-1305(a).

²⁴⁵Id. § 9-1305(c).

²⁴⁶Id. § 9-1305.1.

²⁴⁷Water Well Drillers License Act, PA. STAT. ANN. tit. 32, § 645.1 et seq. (1967 & Supp. 1993).

²⁴⁸PA. STAT. ANN. tit. 32, § 645.1 (1967 & Supp. 1993).

²⁴⁹Id.

²⁵⁰Id.

²⁵¹Id. § 645.3(4) (Supp. 1993).

²⁵²Id. § 645.5.

²⁵³Id. § 645.9.

²⁵⁴Id. § 645.10.

and county in which the well is to be located, and the approximate date on which the drilling is to commence.²⁵⁵

The department has the following mandatory duties and powers:

- To suspend or revoke the license of any well driller if the license is obtained through error or fraud, or for failure to file the reports or maintain the records required, and to grant new licenses to persons whose licenses have been revoked.²⁵⁶
- To make inspections and require the taking of records, which must not materially increase the drilling costs.²⁵⁷

Moreover, the department may do the following:

- Require licensees to file with the department reports containing data from the records.²⁵⁸
- Effectuate the provisions of this act and adopt, amend and rescind such reasonable rules and regulations as may be necessary to accomplish the purposes of this act.²⁵⁹

Like other State acts dealing with conservation of ground water, Pennsylvania law imposes a set of penalties on violators. Pennsylvania law imposes both monetary fines and jail time for violations.

Alabama (region 2).—Alabama has recently enacted the Alabama Water Resources Act, which became effective on February 23, 1993.²⁶⁰ The act creates the Alabama Office of Water Resources as a Division of the Department of Economic and Community Affairs²⁶¹ and the Water Resource Commission.²⁶² The office and commission have the power and responsibility to develop plans and strategies for the management of the water.²⁶³ However, the authority to implement and enforce the rules and regulations promulgated by the commission belongs to the Alabama Department of Environmental Management.²⁶⁴

The Office of Water Resources has a number of responsibilities including—

- developing long-term strategic plans for use of the water;
- acting through the commission, adopting and promulgating rules, regulations, and standards for the purpose of this chapter;
- implementing quantitative water resource programs and projects;
- serving as a repository for data regarding Alabama water;
- at its discretion, studying, analyzing, and evaluating the diversion, withdrawal, or consumption of water;

²⁵⁵PA. STAT. ANN. tit. 32, § 645.1 (1967 & Supp. 1993). § 645.10(c).

²⁵⁶Id. § 645.8.

²⁵⁷Id. § 645.10(a).

²⁵⁸Id. § 645.10(b).

²⁵⁹Id. § 645.12.

²⁶⁰Alabama Water Resources, ALA. CODE § 9-10B-1 et seq. (Supp. 1993).

²⁶¹Id. § 9-10B-4.

²⁶²Id. § 9-10B-12.

²⁶³Id. § 9-10B-2(5).

²⁶⁴Id. § 9-10B-23.

preparing comprehensive plans, programs, and policies to encourage or require efficient use of State water;

entering into agreements or contracts;

issuing, modifying, suspending, or revoking orders, citations, or notices of violation;

holding hearings relating to any provisions of this chapter;

applying for, accepting, and disbursing advances, loans, grants, contributions, and other form of assistance;

employing technical, professional, clerical, or other staff members;

undertaking or participating in studies, surveys, analyses, or investigations of water resources;

conducting a program of education and public enlightenment regarding State water;

making an annual report to the Governor and the presiding officers of the State House and senate; and

enforcing all provisions of this chapter and filing legal actions to prosecute, defend, or settle actions brought by or against the Office of Water Resources.²⁶⁵

In addition to the above responsibilities, the Office of Water Resources is also authorized to assess and issue civil penalties on any person in violation of— any provision of this act or

any rule or regulation promulgated (except the rules and regulations under the enforcement of the Alabama Department of Environment Management).²⁶⁶

The Alabama Water Resources Commission consists of 19 members who must be Alabama citizens.²⁶⁷ The commission has a number of duties including—

advising the Governor and the presiding officers of the senate and house on matters related to State water;

providing guidance to the director and the division chief on all matters within the commission's scope of authority;

advising in the formulation of policies, plans, and programs of the Office of Water Resources;

establishing, adopting, promulgating, modifying, appealing, and suspending any rules or regulations authorized pursuant to this act;

advising the Office of Water Resources to implement policies, plans, and programs governing state water; and

hearing and determining appeals of administrative actions of the Office of Water Resources.²⁶⁸

²⁶⁵Alabama Water Resources, ALA. CODE § 9-10B-5.

²⁶⁶Id. § 9-10B-5(19).

²⁶⁷ALA. CODE § 9-10B-12. For specific requirement concerning membership of the commission Id. For terms of members of the commission, see Id. § 9-10B-13. For expiration of term or vacancy on commission, succession, and appointment, see Id. § 9-10B-14. For remuneration of the commission, meeting, division chief as ex officio secretary, see Id. § 9-10B-17.

This act recognizes that use of water for human consumption has priority and no limitation upon usage for human consumption will be imposed except in emergency situations.²⁶⁹ However, there are exemptions from the law, including—

- impoundments or similar containments confined completely upon an individual's property that store water where the initial diversion, withdrawal, or consumption is acknowledged in a certificate of use;
- waste water treatment ponds and impoundments subject to regulation under the Clean Water Act, Mine Safety and Health Act, or Surface Mining Control Act; and
- surface impoundments constituting solid waste management units under the Resource Conservation and Recovery Act.²⁷⁰

The commission and the Office of Water Resources are required to promulgate and adopt rules and regulations governing declarations of beneficial use and certificates of use.²⁷¹ Moreover, a declaration of beneficial use must be submitted by each public water system that regularly serves more than 10,000 households and by each individual business which withdraws or consumes more than 100,000 gallons of water on any day within 90 days of the promulgation of rules and regulations, and 180 days of the promulgation if the public water system serves less than 10,000 households.²⁷²

However, a person does not have to submit a declaration if such person diverts or withdraws less than 100,000 gallons of water each day,²⁷³ or uses water for purposes of irrigation and does not have the capacity to use 100,000 gallons of water or more on any day, unless the commission determines by regulation that submission of declaration is required to accomplish the purpose of this act.²⁷⁴ However, a person who has the capacity to use 100,000 gallons or more of water on any day must submit a declaration of beneficial use to the Office of Water Resources.²⁷⁵ The act does not require the submission of either declaration of beneficial use or certificate of use for—

- instream uses of water, including, but not limited to, recreation, navigation, water oxygenation system, and hydropower generation; or
- impoundments covering not more than 100 acres in surface area that are confined and retained completely upon the property of a person and used solely for recreational purposes, including sport fishing.²⁷⁶

Georgia (region 2).—In 1972, Georgia enacted the Groundwater Use Act of 1972²⁷⁷ to put water resources to the most beneficial use while conserving these resources.²⁷⁸ The act broadly defines the term *ground water* to include "water of underground streams, channels, artesian basins, reservoirs, lakes, and other water under the

²⁶⁸Alabama Water Resources, ALA. CODE § 9-10B-16.

²⁶⁹Id. § 9-10B-2(2).

²⁷⁰Id. § 9-10B-2(7).

²⁷¹Id. § 9-10B-19.

²⁷²Id. § 9-10B-20(a)-(b).

²⁷³Id. § 9-10B-20(c).

²⁷⁴Id. § 9-10B-20(d).

²⁷⁵Id. § 9-10B-20(d).

²⁷⁶Id. § 9-10B-20(c).

²⁷⁷In 1992, pursuant to § 28-9-5, "Ground-water" was substituted for "Ground Water". For an interesting article regarding this Act, see *The Ground Water Use Act of 1972: Protection for Georgia's Ground water Resource*, 6 GA. L. REV. 709 (1972).

²⁷⁸GA. CODE ANN. § 12-5-91 (1992).

surface of the earth, whether public or private, natural or artificial, which is contained within, flows through or borders upon this state or any portion thereof, including those portions of the Atlantic Ocean over which Georgia has jurisdiction."²⁷⁹

The act considers the Board of Natural Resources to be the controlling agency, with a number of authorities. The most important among these is the authority to adopt rules and regulations to implement the Groundwater Use Act.²⁸⁰

Under this act, a permit is required for any withdrawal or use of ground water in excess of 100,000 gallons per day.²⁸¹ If there is sufficient evidence provided by the applicant that the water withdrawn or used from the ground is *not consumptively used*, the division may issue a permit without a hearing.²⁸² The act is less rigid on *nonconsumptive use* because nonconsumptive use is defined to mean the use of water withdrawn from a ground water system or aquifer in such a manner that it is returned to the ground water system or aquifer from which it was withdrawn without substantial diminution in quantity or substantial impairment in quality at or near the point from which it was withdrawn.²⁸³ Permits are allowed to last for 10 years or a period necessary for reasonable amortization of the applicant's water-withdrawal and water-using facilities.²⁸⁴ Permit holders can renew permits at any time within 6 months before the expiration date²⁸⁵ but may not transfer permits unless allowed by the division.²⁸⁶

The Environmental Protection Division of the Department of Natural Resources is authorized to grant a permanent (for maximum of 10 years) or temporary permit;²⁸⁷ modify or revoke any permit following a written notice;²⁸⁸ deny a permit if its use is contrary to public interest;²⁸⁹ and enter upon property to conduct investigations.²⁹⁰

The act has separate provisions for withdrawal or use of ground water for farm uses.²⁹¹ In addition to other meanings, the term *farm uses* is also defined to mean the processing of perishable agricultural products and the irrigation of recreational turf. However, for the counties of Chatham, Effingham, Bryan, and Glynn,

irrigation of recreational turf is not considered a farm use.²⁹² The act imposes civil penalties for violating this law; intentionally or negligently failing or refusing to comply with the director's final order will result in civil penalties.²⁹³ Moreover, such violations may also be subject to a criminal penalty (conviction of a violation

²⁷⁹GA. CODE ANN. § 12-5-92(6).

²⁸⁰Id. § 12-5-94.

²⁸¹Id. § 12-5-96(a).

²⁸²Id. § 12-5-96(b).

²⁸³Id. § 12-5-92(7).

²⁸⁴Id. § 12-5-97(a) (1992).

²⁸⁵Id. § 12-5-97(b).

²⁸⁶Id. § 12-5-97(c).

²⁸⁷Id. § 12-5-96(c)(1)-(2).

²⁸⁸Id. § 12-5-96(c)(3) (1992).

²⁸⁹Id. § 12-5-96(c)(4).

²⁹⁰Id. § 12-5-98.

²⁹¹Id. § 12-5-105.

²⁹²Id. § 12-5-92(5.1).

²⁹³Id. § 12-5-106.

constitutes a misdemeanor).²⁹⁴ In addition to the Groundwater Use Act of 1972, Georgia also has its own Water Well Standards Act of 1985.²⁹⁵

Arkansas (region 3).—In 1991, Arkansas enacted the Arkansas Groundwater Protection and Management Act, which became effective on October 1, 1991.²⁹⁶ The act acknowledges that it is necessary to reduce ground water use to protect ground water for future consumption. Reductions are to come from conservation or use of surface water, but in critical ground water areas, limiting ground water withdrawals through the use of water rights may become necessary.²⁹⁷ However, all provisions apply only in critical ground water areas.²⁹⁸

This act was specifically designed to deal with *critical ground water areas*.²⁹⁹ After the Soil and Water Conservation Commission designates a critical ground water area,³⁰⁰ and when it determines that action is necessary within a critical area, it must declare that water rights are required for water withdrawal.³⁰¹ However, before initiating a regulatory program, the Commission must describe the proposed action, the reasons for such, and the recommended boundaries (if it is different from the previous critical area designation).³⁰² In addition, it must hold a public hearing in each county within the proposed critical area.³⁰³

By declaring an area a critical ground water area, all persons who want to withdraw ground water from an existing well or construct a new well within the critical ground water area must first obtain a water right.³⁰⁴ A *water right* is defined to mean the authority or permission issued by the commission to use ground water within a critical ground water area.³⁰⁵

The Arkansas law creates the Arkansas Soil and Water Conservation Commission,³⁰⁶ that is authorized to—

promulgate rules and regulations for ground water classification and aquifer use, well spacing, issuance of ground water rights within critical ground water areas, and assessment of fees;

issue subpoenas for any witness to require attendance and testimony;

administer an oath to any witness in any hearing, investigation, or proceeding before the commission;

enter upon property for purposes of conducting investigations, studies, or enforcing this law;

reduce or suspend notice and hearing requirements under this act in times of an emergency;

²⁹⁴GA. CODE ANN. § 12-5-107.

²⁹⁵Id. § 12-5-120 et seq. (1992).

²⁹⁶Arkansas Ground Water Protection and Management Act, ARK. CODE ANN. § 15-22-901 et seq. (Mite Supp. 1991).

²⁹⁷Id. § 15-22-902 (Michie Supp. 1991).

²⁹⁸Id.

²⁹⁹Id. § 15-22-902 (Michie Supp. 1991).

³⁰⁰Id. § 15-22-908. Before designation of such area, the commission must describe the proposed action, the reasons, and the recommended boundaries. The act also requires a holding of a public hearing in each county within the proposed critical area. Id.

³⁰¹Id. § 15-22-909(a)(1) (Michie Supp. 1991).

³⁰²Id. § 15-22-909(2).

³⁰³Id. § 15-22-909(3).

³⁰⁴Id. § 15-22-909(4).

³⁰⁵Id. § 15-22-903(12).

³⁰⁶Id. § 15-20-201 (Michie Supp. 1987).

issue orders to implement or enforce any provisions of this act;

delegate any powers under this act to districts within a critical ground water area;

provide technical assistance and establish guidelines to be followed by districts;

resolve disputes between districts to which the commission has delegated powers, approving regulations for them, and hearing appeals from their decisions;

provide cost-share assistance from the Arkansas Water Development Fund, not to exceed 40 percent, to persons for the installation of approved water conservation and development practices;³⁰⁷ and

develop and implement an education and information program to encourage water conservation.³⁰⁸

However, the commission's powers have some limitations. The commission cannot—

reduce or limit withdrawals of ground water from existing wells for which a water right is protected by the grandfathering existing wells provisions;³⁰⁹

regulate withdrawals of ground water from existing or proposed wells that have a maximum potential flow rate of less than 50,000 gallons per day;³¹⁰

regulate withdrawals of ground water from individual household wells used exclusively for domestic use;³¹¹ and

restrict marketers of bottled water and public water supply systems in the place of use of ground water.³¹²

Owner of an existing well can construct a replacement well after abandoning the existing well. However, the original well must be converted to a nonregulated use or plugged in the manner prescribed by the commission.³¹³

Two particular ways are possible to obtain a water right. First, a water right may be issued if the applicant is protected by the "grandfathering existing wells" provision. Within 1 year of the initiation of the regulatory program, the commission is required to issue to any applicant a water right for existing wells equal to the average quantity of water withdrawn for beneficial use and reported over the past 3 water years.³¹⁴ Moreover, for new wells constructed during the first year of initiation of the regulatory program, the commission is required to issue a water right equal to the quantity of water requested to be withdrawn for beneficial use.³¹⁵ Second, an applicant may obtain a water right by applying directly to the

³⁰⁷ARK. CODE ANN. § 15-22-904 (Michie Supp. 1991).

³⁰⁸Id. § 15-22-907 (Michie 1987 & Supp. 1991).

³⁰⁹Id. § 15-22-905(1)-(2), 15-22-910(a)(1) (Michie Supp. 1991).

³¹⁰Id. § 15-22-905(3).

³¹¹Id. § 15-22-905(4).

³¹²Id. § 15-22-905(6).

³¹³Id. § 15-22-905(5).

³¹⁴Id. § 15-22-910(a)(1) (Michie Supp. 1991).

³¹⁵Id. § 15-22-910(a)(2).

commission, subject to the commission's decision to grant the application, deny the application, or grant the application subject to necessary reductions or conditions.³¹⁶

Under this act, water rights are issued for beneficial uses³¹⁷ and limited to such time as designated by the commission.³¹⁸ In the water right, the commission may also reduce annual withdrawals.³¹⁹ In the event that two or more competing applications specifying the same priority are made, the act carefully details a precedence provision giving preference to a renewal over an initial application, and on all renewal applications, consideration must be given to reasonable beneficial use.³²⁰

A water right may also be canceled—

if water is used for a purpose other than that for which the water right was issued;³²¹

for nonuse or failure to put the water to a reasonable beneficial use, if such nonuse is for a reason other than implementation of conservation measures, crop rotation, conversion to surface water sources, or climatic conditions;³²²
or

for failure to report water use or to pay the fee for two consecutive years.³²³

The act further emphasizes that in general the place of use described in the water right is the only realty on which the allocated water may be used.³²⁴ A water right recipient acquiring or leasing additional realty, contiguous or noncontiguous, upon application is entitled to an amended water right so as to encompass such realty.³²⁵ Because a water right attaches to and runs with the land, it may not be conveyed or marketed or transferred separate from the realty described in the water right.³²⁶ In addition, a water right is considered to be automatically transferred, meaning that a water right is an incident of surface ownership of the realty and, upon notice to the commission, must be transferred to the new landowner.³²⁷

Mississippi (region 3).—After repealing the 1976 ground water provisions in 1988,³²⁸ the Mississippi Legislature enacted the Water Resources law to conserve its water resource.³²⁹ The legislature declares the policy that "conjunctive use of ground water and surface water [is] encouraged for the reasonable and beneficial use of all water resources of [Mississippi]."³³⁰

³¹⁶ARK. CODE ANN. § 15-22-910(b).

³¹⁷Id. § 15-22-911(a).

³¹⁸Id. § 15-22-911(b) (Michie Supp. 1991) (providing that in determining such time, the commission must give consideration to the time required to reasonably amortize the investments made by the water user for the use of water, the cost, and the useful life of the facility).

³¹⁹Id. § 15-22-911(c) (Michie Supp. 1991).

³²⁰Id. § 15-22-911(d).

³²¹Id. § 15-22-911(e)(1).

³²²Id. § 15-22-911(e)(2).

³²³Id. § 15-22-911(e)(3).

³²⁴Id. § 15-22-911(f) (Michie Supp. 1991). There are two exceptions to this general rule. They are: (1) replacement wells and (2) in times of emergency. Id.

³²⁵Id. § 15-22-911(f) (Michie Supp. 1991).

³²⁶Id. § 15-22-911(g).

³²⁷Id. § 15-22-911(h).

³²⁸The former MISS. CODE ANN. § 51-4-1 through 51-4-19 pertaining to ground water was repealed by Laws, 1988, ch. 312, § 4, effective from and after July 1, 1988.

³²⁹Water Resources, Regulation and Control, MISS. CODE ANN. § 51-3-1 et seq. (1972 & Supp. 1993).

³³⁰Id. § 51-3-1 (1972).

In Mississippi, use of State water does not constitute absolute ownership or an absolute right to use such water. Water remains subject to the principle of beneficial use.³³¹ Beneficial use is defined to mean the "application of water to a useful purpose as determined by the commission, [but] excluding waste of water."³³² Thus, applications must be carefully examined to determine whether all requirements and standards are met.³³³

Like other states' laws regulating ground water, Mississippi Water Resources law also requires water users to obtain permits, unless exempted by the law.³³⁴ Some of these exemptions include—

use for domestic purposes,

use of surface water in impoundments that are not located on continuous, free-flowing watercourses,

use of water obtained from a well that has a surface casing diameter of less than 6 inches.³³⁵

However, these exemptions are not applicable to persons in the business of developing real property for resale.³³⁶ Permit holders using more than 20,000 gallons per day may be required to file reports to the commission.³³⁷ Because permits last for 10 years or less,³³⁸ permit holders may seek reissuance of permits. However, the board may modify, terminate, or decline to reissue a permit upon a showing of good cause.³³⁹

The law provides that any person proposing to construct, enlarge, repair, or alter a dam or reservoir must obtain written authorization from the board before proceeding with the construction.³⁴⁰

The State Permit Board—serving as the authority to grant permits³⁴¹—has the following powers:

- To grant a permit with conditions upon issuance as it reasonably deems necessary to effectuate the purposes of the Mississippi law.
- To grant any temporary or emergency permit for a period.
- To modify or revoke any permit upon not less than 60 days' written notice to the permittee affected.
- To impose sanctions as the board deems appropriate for failure to conform with permit conditions.
- To delegate authority to any joint water management district to receive, investigate, and make recommendations to the board regarding applications for permits.

³³¹MISS. CODE ANN. § 51-3-13.

³³²Id. § 51-3-3(e).

³³³Id. § 51-3-13.

³³⁴Id. § 51-3-5(1).

³³⁵Id. § 51-3-7(1) (1972).

³³⁶Id. § 51-3-7(1).

³³⁷Id. § 51-3-23.

³³⁸Id. § 51-3-9(1).

³³⁹Id. § 51-3-9(3).

³⁴⁰Id. § 51-3-39 (1972).

³⁴¹Id. § 51-3-15(1).

- To require all abandoned bore holes and wells more than 25 feet deep to be properly plugged to prevent ground water contamination.³⁴²

In assisting waterway, river basin, and watershed authorities and districts,³⁴³ the law provides a different set of duties and powers to the Bureau of Land and Water Resources through the Division of Regional Water Resources. They are as follows:

- To offer assistance, as deemed appropriate, to the various authorities and districts in the performance of any of their powers and programs.
- To inform authorities and districts of the activities and experiences of all other such authorities and districts, and to facilitate an interchange of experiences among such authorities and districts.
- To coordinate the programs of the various authorities and districts.
- To secure the cooperation and assistance of the United States and any of its agencies, and of other agencies of Mississippi in the work of such authorities and districts.
- To disseminate information throughout the state regarding the activities and programs of the various authorities and districts and to encourage the formation of such authorities and districts in areas where their organization is desirable.
- To seek and receive grants of moneys and other assets from any legitimate sources.
- To distribute any appropriated or other funds or assets in its custody or under its control, from State, Federal, or other governmental agencies or political subdivisions, or from private grants.
- To give guidance and overall supervision to districts when such assistance is required or acceptable.
- To receive, file, and review permit applications and notices of claims and any other documents regarding water uses and rights.
- To serve as the repository for information gathered or filed under the Mississippi Water Resources law.³⁴⁴

Through its Bureau of Land and Water Resources, the Commission on Natural Resources must study the existing water resources in Mississippi and formulate a state water management plan.³⁴⁵ In formulating this plan, the commission must consider a number of factors, including—

the attainment of maximum beneficial use of water;

the maximum economic development of water resources, consistent with other uses;

the control of such water for the purposes of environmental protection, drainage, flood control, and water storage;

the quantity of water available for application to a beneficial use;

the prevention of wasteful, uneconomical, impractical, or unreasonable uses of water resources, including free-flowing wells;

³⁴²MISS. CODE ANN. § 51-3-15(2).

³⁴³For the list of the authorities and districts that are allowed to receive assistance from the Division of Regional Water Resources, Id. § 51-3-18.

³⁴⁴Id. § 51-3-16 (1972).

³⁴⁵Id. § 51-3-21(1)

presently exercised domestic or exempted uses and permit rights;
 the preservation and enhancement of the water quality of the State and the provisions of the State water quality plan;
 the State water resources policy; and
 the allocation of surface water and ground water in those situations in which the Governor has declared an emergency situation.³⁴⁶

In addition to the above duty, the commission has the following duties and powers:

- To negotiate and recommend to the Mississippi Legislature compacts and agreements regarding the state's share of water flowing in watercourses where a portion of such water is contained within the territorial limits of a neighboring state.³⁴⁷
- To enter upon private or public lands for the purpose of inspecting waterworks, making surveys, or conducting tests or examinations necessary for the gathering of information on water resources or uses, subject to responsibility for any damage done to property entered.³⁴⁸
- To serve as the enforcement agency for the Permit Board when the board determines that sanctions available to it are not sufficient to achieve compliance with the laws.³⁴⁹

Well drillers must be licensed³⁵⁰ and keep accurate records on each water well drilled and file a report containing such information to the State board of water commissioners.³⁵¹

The board of water commissioners may revoke a driller's license if one of the enumerated grounds is established, including—

- material misstatement in the application for license;
- willful violation of this chapter's provision;
- obtaining license by fraud or misrepresentation;
- guilty of fraudulent or dishonest practices;
- lack of competence as a well driller;
- failure to file reports as required; and
- willful disobedience of reasonable orders, rules, regulation of the board.³⁵²

Furthermore, like other state laws, the Mississippi law also imposes civil penalties on persons who violate the license requirement or the board's order.³⁵³

³⁴⁶MISS. CODE ANN. § 51-3-21(1972 & Supp. 1993)

³⁴⁷Id. § 51-3-41 (1972).

³⁴⁸Id. § 51-3-43.

³⁴⁹Id. § 51-3-55(1).

³⁵⁰Id. § 51-5-1. For qualifications for license, Id. § 51-5-3.

³⁵¹Id. § 51-3-13.

³⁵²Id. § 51-3-11.

³⁵³Id. § 51-5-17.

Wisconsin (region 4).—In 1983, Wisconsin enacted the Groundwater Protection Standards Law to regulate its ground water,³⁵⁴ with the intent to minimize the concentration of polluting substances in ground water by using numerical standards in all ground water regulatory programs.³⁵⁵ Wisconsin is among a few States that control ground water through systematic numerical standards for regulatory programs.

The Department of Natural Resources has responsibility to establish enforcement standard³⁵⁶ and develop and operate a system for monitoring and sampling ground water.³⁵⁷ The Department of Health and Social Services, however, is responsible for making recommendations to the Department of Natural Resources regarding enforcement standards for public health concerns.³⁵⁸

Each regulatory agency submits to the department a list of those substances that are related to facilities, activities, and practices within its authority to regulate.³⁵⁹ The department must consider these substances according to the three categories and rankings established by this law. The substances are classified in the following three categories:

Category 1—If a substance is detected in ground water in concentrations in excess of a Federal number for that substance.³⁶⁰ Category 1 includes the following substances: aldicarb, arsenic, bacteria (as total coliform), barium, benzene, carbofuran, chloride, chromium, color, copper, cyanide, fluoride, foaming agents measured as methylene blue active substances (MBAS), hydrogen sulfide, iron, lead, manganese, methylene chloride, nitrate (including nitrite and nitrogen), odor, radioactivity (specifically radium 226 and 228 and uranium), selenium, sulfate, tetrachloroethylene, total residue, trichlorethylene, and zinc.³⁶¹

Category 2—If the substance is detected in ground water and is of public health or welfare concern but is not detected in concentrations in excess of a Federal number, or is one for which there is no Federal number.³⁶²

Category 3—If the substance has a reasonable probability of being detected in ground water and is of public health or welfare concern.³⁶³

The substance within its category is ranked as follows: The substances that pose the greatest risks to the health or welfare of the Wisconsinites, taking into consideration, among other things, other characteristics including carcinogenicity, teratogenicity, mutagenicity, and interactive effects.³⁶⁴

³⁵⁴Groundwater Protection Standards, WIS. STAT. ANN. § 160.001 (West 1989 & Supp. 1993).

³⁵⁵Id. § 160.001, For an interesting article about ground water contamination, see David A. Belluck & Sally L. Benjamin, *Groundwater Contamination*, 63 WIS. LAW. 17 (1990).

³⁵⁶Id. § 160.07.

³⁵⁷Id. § 160.27.

³⁵⁸Id. § 160.07(3).

³⁵⁹Id. § 160.05(1).

³⁶⁰Id. § 160.05(3)(a).

³⁶¹WIS. STAT. ANN., 1983 Act 410, § 2038(4).

³⁶²Id. § 160.07 (3) (a).

³⁶³Id. § 160.05(3)(c).

³⁶⁴Id. § 160.05(4).

In determining whether a substance is of public health concern, the Department of Natural Resources must take into account the degree to which the substance may—
cause or contribute to an increase in mortality;

cause or contribute to an increase in illness or incapacity, whether chronic or acute;

pose a substantial present or potential hazard to human health because it

- causes or contributes to other adverse human health effects or changes of a chronic or subchronic nature even if not associated with illness or physical, chemical or infectious characteristics; incapacity;³⁶⁵ or
- causes or contributes to other effects reasonably related to public health.³⁶⁶

In determining whether a substance is of public health concern, the department must take into account whether the substance may—

influence the aesthetic suitability of water for human use;

influence the suitability of water for uses other than human drinking water;

have a substantial adverse effect on plant life or animal life,³⁶⁷ or

cause other characteristics reasonably related to public welfare.³⁶⁸

Moreover, each regulatory agency must promulgate rules, with public participation, according to the enforcement standard or a prevention action limit adopted by the Department of Natural Resources.³⁶⁹

The Wisconsin Underground Water Protection Standards Law is unique for setting forth a specific provision regarding the participation of American Indian tribes and bands. This provision provides that the Department of Natural Resources must cooperate with American Indian tribes and bands with the approval of the tribal governing body for the purposes of—

providing advice and assistance to American Indians who wish to establish a ground water monitoring or regulatory program on the lands of any American Indian tribe or band;

obtaining for state use any information on ground water quality which results from a monitoring program conducted by American Indians;

using State resources to conduct ground water monitoring or regulatory activities on the lands of any American Indian tribe or band; and

sharing with an American Indian tribe or band the results of ground water monitoring conducted by the department or other agencies that relate to the potential contamination of ground water under the lands of that American Indian tribe or band.³⁷⁰

³⁶⁵WIS. STAT. ANN. § 160.05(6)(b).

³⁶⁶Id. § 160.05(6)(c).

³⁶⁷Id. § 160.05(6)(d).

³⁶⁸Id. § 160.05(6)(e).

³⁶⁹Id. § 160.21.

³⁷⁰Id. § 160.36.

Iowa (region 5).—In 1987, Iowa enacted the Groundwater Protection Act,³⁷¹ with the goal of "prevent[ing] contamination of ground water from point and nonpoint sources of contamination to the maximum extent practical, and if necessary . . . restor[ing] the ground water to a potable state, regardless of present conditions, use, or characteristics."³⁷²

The act states a number of ground water protection policies. They are as follows:

- Prevent further contamination of ground water from any source.³⁷³
- Require appropriate actions to prevent further contamination at the discovery of any ground water contamination. These actions may consist of investigation and evaluation or enforcement actions if necessary to stop further contamination as required under the ground water protection program evaluation.³⁷⁴
- All persons in the State have the right to have their lawful use of ground water unimpaired by the activities of any person which render the water unsafe or unpotable.³⁷⁵
- All persons in the State have the duty to conduct their activities so as to prevent the release of contaminants into ground water.³⁷⁶
- Documentation of any contaminant that presents a significant risk to human health, the environment, or the quality of life must result in either passive or active cleanup. In both cases, the best technology available or best management practices will be used. The Department of Natural Resources shall adopt rules that specify the general guidelines for determining the cleanup actions necessary to meet the goals of the State and the general procedures for determining the parties responsible. Until the rules are adopted, the absence of rules will not be raised as a defense to an order to clean up a source of contamination.³⁷⁷
- Adopting health-related ground water standards may be of benefit in the overall ground water protection or other regulatory efforts of the State. However, the existence of such standards, or lack of them, will not be construed or used in derogation of the ground water protection goal and protection policies of the State.³⁷⁸
- The department must take actions necessary to promote and assure public confidence and public awareness. In pursuing this goal, the department must make public the results of ground water investigations.³⁷⁹
- Education of the people of Iowa is necessary to preserve and restore ground water quality. The content of this ground water protection education must assign obligations, call for sacrifice, and change some current values. Educational efforts should strive to establish a conservation ethic among

³⁷¹Iowa Groundwater Protection Act of 1987, IOWA CODE ANN. § 455E.1 et seq. (West 1990 & Supp. 1993).

³⁷²Id. § 455E.4 (West 1990).

³⁷³Id. § 455E.5(1).

³⁷⁴Id. § 455E.5(2). Id. § 455E.8(1).

³⁷⁵Id. § 455E.5(3).

³⁷⁶Id. § 455E.5(4).

³⁷⁷Id. § 455E.5(5).

³⁷⁸Id. § 455E.5(6).

³⁷⁹Id. § 455E.5(7).

Iowans and should encourage each Iowan to go beyond enlightened self-interest in the protection of ground water policy.³⁸⁰

The Department of Natural Resources is designated as the primary agency to coordinate and administer ground water protection programs for Iowa.³⁸¹ The director of the department has a number of powers and duties including—
developing and administering a comprehensive ground water monitoring network;³⁸²

including in the annual report the number and concentration of contaminants detected in ground water;³⁸³

reporting to the U.S. EPA any data concerning the contamination of ground water by a contaminant not regulated under the Federal Safe Drinking Water Act;³⁸⁴

completing ground water hazard mapping of the State and making the results available to State and local planning organizations;³⁸⁵

establishing system(s) within the department for collecting, evaluating, and disseminating ground water quality data and information;³⁸⁶

developing and maintaining a natural resource geographic information system and comprehensive water resource data;³⁸⁷

developing, and adopting by administrative rule, criteria for evaluating ground water protection programs;³⁸⁸

taking any action authorized by law, including investigatory and enforcement actions;³⁸⁹

disseminating data and information to the public to the greatest extent practical;³⁹⁰ and

developing a program, in consultation with the Department of Education and the Department of Environmental Education, regarding water quality issues that shall be included in the minimum program required in grades seven and eight.³⁹¹

The Environmental Protection Commission is authorized to adopt rules to implement this law.³⁹² Moreover, political subdivisions are encouraged to implement ground water protection policies within their jurisdictions as long as the implementation is consistent with the department's rules.³⁹³

³⁸⁰IOWA CODE ANN. § 455E.5(8).

³⁸¹Id. § 455E.7. The Department of Natural Resources is created under § 455A.2.

³⁸²Id. § 455E.5(1).

³⁸³Id. § 455E.5(2).

³⁸⁴Id. § 455E.8(3).

³⁸⁵Id. § 455E.8(4).

³⁸⁶Id. § 455E.8(5).

³⁸⁷Id. § 455E.8(6) (West 1990).

³⁸⁸Id. § 455E.8(7).

³⁸⁹Id. § 455E.8(8).

³⁹⁰Id. § 455E.8(9).

³⁹¹Id. § 455E.8(10).

³⁹²Id. § 455E.9 (West 1990). The Environmental Protection Commission was created under § 455A.6.

³⁹³Id. § 455E.10(2).

The Iowa Groundwater Act provides that a ground water protection fund is to be created in the state treasury.³⁹⁴ From this fund, a number of accounts are created, including a solid waste account,³⁹⁵ the agriculture management account,³⁹⁶ a household hazardous waste account,³⁹⁷ a storage tank management account,³⁹⁸ and an oil overcharge account.³⁹⁹

Nebraska (region 5).—The Nebraska Ground Water Management Act and Protection Act covers three particular areas: ground water control areas, ground water management areas, and special protection areas.⁴⁰⁰

Under this act, the Nebraska Legislature emphasizes that ground water is one of the most valuable natural resources.⁴⁰¹ Following the *reasonable use* doctrine, every landowner is entitled only to a reasonable and beneficial use of the ground water underlying such person's land.⁴⁰²

The Nebraska Act provides that the director may designate a control area, following a hearing and evaluation.⁴⁰³ The evaluation consists of a variety of parts, including—

relevant hydrologic and water quality data;

history of development; and

projection of effects of current and new development, and whether such development and use of ground water supply has caused or is likely to cause an inadequate ground water supply or dewatering of an aquifer within the reasonably foreseeable future.⁴⁰⁴

In addition to the previously mentioned criteria, the director must consider other factors such as—

whether conflicts between ground water users are occurring or may be reasonably anticipated; or

whether ground water users are experiencing (or will experience within the foreseeable future) substantial economic hardship as a direct result of current or anticipated ground water development or use.⁴⁰⁵

At the hearing, all interested persons are permitted to appear and present testimony.⁴⁰⁶ If the director determines that a control area shall be established, the director must consult with the State agencies, including Conservation and Survey Division of the University of Nebraska, the Nebraska Natural Resources

³⁹⁴IOWA CODE ANN. § 455E.11(1).

³⁹⁵Id. § 455E.11(2)(a) (West 1990 & Supp. 1993). Id. § 455E.11(2)(b).

³⁹⁶Id. § 455E.11(2)(b).

³⁹⁷Id. § 455E.11(2)(c).

³⁹⁸Id. § 455E.11(2)(d) (West 1990).

³⁹⁹Id. § 455E.11(2)(e).

⁴⁰⁰Nebraska Ground Water Management And Protection Act, NEB. REV. STAT. § 46-656 et seq. For an interesting article regarding Nebraska's Groundwater Control Law and nitrate contamination control, see Susan A. Schneider, *The regulation of Agricultural Practices to Protect Groundwater Quality: The Nebraska Model for Controlling Nitrate Contamination*, 10 VA. ENVTL. L.J. (1990).

⁴⁰¹Nebraska Ground Water Management And Protection Act, NEB. REV. STAT. § 46-656

⁴⁰²Id.

⁴⁰³Id. § 46-658(1).

⁴⁰⁴Id.

⁴⁰⁵NEB. REV. STAT. § 46-658(2)

⁴⁰⁶Id. § 46-658(4)(b).

Commission, the Department of Environmental Control, and affected district(s).⁴⁰⁷ In determining the boundaries of the control area, the director must also consider a number of provided factors.⁴⁰⁸ Once the boundaries have been determined, the director is required to issue an order designating such area as the control area and provide notice of the order.⁴⁰⁹ The act allows the control area's modification or dissolution; however, it emphasizes that modification or dissolution may not be initiated more often than once a year.⁴¹⁰

A permit is required to construct a well in a control or management area.⁴¹¹ An application for a permit or a late permit is denied only if the district in which the proposed well is to be located finds that—

the location or operation of the proposed or other work would conflict with any regulations or controls adopted by the district;

the proposed use would not be a beneficial use of water for domestic, agricultural, manufacturing, or industrial purposes; or

the applicant did not act in good faith in failing to obtain a timely permit (in the case of a late permit only).⁴¹²

Moreover, when the permit is approved, the applicant must start construction as soon as possible after the date of approval. If the applicant fails to complete the project within the permit's terms, the district may withdraw the permit.⁴¹³

Regardless of whether or not any portion of a district has been designated as a control, management, or special ground water quality protection area, a district has a number of powers to administer and enforce this act. These powers include—

adopting and promulgating rules and regulations necessary to discharge the administrative duties assigned in the act;

requiring such reports from ground water users as may be necessary;

conducting investigations and cooperating or contracting with agencies of private corporations or any association or individual on any matter relevant to the administration of the act;

reporting to and consulting with the Department of Environmental Control on all matters regarding the entry of contamination or contaminating materials into ground water supplies; and

issuing cease and desist orders, following 10 days' notice to the person affected.⁴¹⁴ However, before any rule or regulation is adopted, a public hearing must be held.⁴¹⁵

Following the designation of any area as a control area, the district must hold a public meeting to determine the type of control to be imposed within that control area.⁴¹⁶ The district may adopt one or more of the following types of control—

⁴⁰⁷NEB. REV. STAT. § 46-658(4)(c).

⁴⁰⁸Id.

⁴⁰⁹Id. § 46-658(4)(e).

⁴¹⁰Id. § 46-658(4)(b).

⁴¹¹Id. § 46-659(1).

⁴¹²Id. § 46-660.

⁴¹³Id. § 46-662.

⁴¹⁴Id. § 46-663.

⁴¹⁵Id. § 46-663.01

⁴¹⁶Id. § 46-665.

determine the permissible total withdrawal of ground water for each day, month, or year and allocate such withdrawal among the ground water users;

adopt a system of rotation for use of ground water;

adopt well-spacing requirements more restrictive than those provided by this act; and

adopt and promulgate such other reasonable rules and regulations as are necessary to carry out the purpose for which a control area was designated.⁴¹⁷

New Mexico (region 6).—In 1990, New Mexico enacted the Ground Water Protection Act, that was amended in 1992, to

"provide substantive provision and funding mechanisms that will enable the state to take corrective action at sites contaminated by leakage from underground storage tanks."⁴¹⁸

This act created a seven member underground storage tank committee, which consists of one secretary (or its designee) and six appointed members.⁴¹⁹ The membership of the committee reflects the New Mexico Legislature's great concern about contaminating leakage into ground water. The committee consists of individuals from different groups such as the fire protection districts, elected local government officials, wholesalers of motor fuels, independent retailers of motor fuels, individuals knowledgeable about corrective actions in connection with leaking underground storage tanks, and private citizens or interest groups.⁴²⁰

The six appointed members have staggered appointments, that is, two for 1 year, two for 2 years, and two for 3 years.⁴²¹ Staggered opportunities are used to ensure management continuity. For example, if the terms of two members expire and two new members are appointed to the board, the business of the board would still continue because four members' terms have not expired.

The act authorizes the committee to:

- Recommend proposed regulations to the board or the secretary.
- Establish procedures, practices, and policies governing the committee's activities.
- Review all proposed corrective action plans of the department and submit comments on the plans to the secretary.
- Review all proposed payments from the corrective action fund and submit its comments on the proposed payments to the secretary.⁴²²

The Environmental Protection Board is authorized to adopt regulations for establishing priorities for corrective action at sites contaminated by underground storage tanks, after recommendations from the underground storage tank

⁴¹⁷NEB. REV. STAT. § 46-666(1).

⁴¹⁸Ground Water Protection Act, NEW MEXICO STAT. ANN. § 74-6B-2 (Michie Supp. 1993).

⁴¹⁹Id. § 74-6B-4.A.

⁴²⁰Id. §

⁴²¹Id. § 74-6B-4.B.

⁴²²Id. § 74-6B-4.C.

committee.⁴²³ However, only the Department of the Environment can make expenditures from the corrective action fund in accordance with regulations adopted by the board or the secretary.⁴²⁴

The New Mexico Ground Water Protection Act also creates a corrective action fund.⁴²⁵ From it an owner or operator who has or will perform corrective action, in accordance with applicable environmental laws and regulations, can apply to the department for payment of the costs of corrective action.⁴²⁶ In 1992, the New Mexico Legislature appropriated \$200,000 from the corrective action fund. However, this appropriation was made upon two contingencies—
 the Department of the Environment adopts regulations pursuant to the 1992 act, and
 any unexpended or unencumbered balance remaining at the end of this fiscal year will revert to the action fund.⁴²⁷

In 1993, the legislature also appropriated \$2,000,000 from the State road fund and \$3,000,000 from the corrective action fund to the Department of Finance and Administration to pay for studies, services, and corrective activities associated with the Terrero mine cleanup project and reclamation of the El Molino mill tailings site. The 1993 appropriation also demanded reversion of any unexpended or unencumbered balance to the fund from which the appropriation was made.⁴²⁸

The New Mexico Act is unique, for it created an early response team, responsible for requests from municipalities or counties for advice and technical assistance regarding alleged releases from underground storage tanks owned or operated by the municipalities or counties.⁴²⁹

Texas (regions 6 & 7).—Because ground water is an important resource in Texas,⁴³⁰ Texas Underground Water Conservation Districts law is detailed and complete.⁴³¹ Under the general provision, it recognizes and declares that the ownership and rights of the ground water belong to the landowner and his or her lessees and assigns.⁴³² It further specifies that the laws and administrative rules regarding the use of surface water do not apply to ground water,⁴³³ and the rules adopted by a district apply only within the boundaries of the districts.⁴³⁴

⁴²³NEW MEXICO STAT. ANN. § 74-6B-7.B

⁴²⁴Id. § 74-6B-7.C.

⁴²⁵Id. § 74-6B-2 (Michie Supp. 1993).

⁴²⁶Id. § 74-6B-13

⁴²⁷Laws 1992, ch. 64, § 12, effective March 9, 1992.

⁴²⁸Laws 1993, ch. 366, § 3G, effective June 18, 1993.

⁴²⁹Id. § 74-6B-12 (Michie Supp. 1993).

⁴³⁰D.L. Reddell & J.M. Sweeten, *Management of Groundwater Through Underground Water Conservation Districts in Texas*, NON-POINT WATER QUALITY CONCERNS—LEGAL AND REGULATORY ASPECTS, 1989 National Symposium, American Society of Agricultural Engineers 100 (1989).

⁴³¹Underground Water Conservation Districts Law, TEX. WATER CODE ANN. § 52.001 et seq. (West 1972 & Supp. 1995)

⁴³²Id. § 52.002 (West 1972). Under the common law of Texas, the owner of land owns soil and percolating water, which is part of soil. *U.S. v. Shurbert* (C.A. 1965), 347 F.2d 103. *Underground water* includes water percolating below surface and does not include subterranean streams or underflow of rivers. *Bartley v. Sone* (Civ. App. 1975), 527 S.W.2d 754.

⁴³³TEX. WATER CODE ANN. § 52.003 (West 1972).

⁴³⁴Id. § 52.004 (West Supp. 1995).

The act provides that the ground water conservation district may be created in one of three ways:

- By a special legislative act.⁴³⁵
- By petition to the Texas Water Commission by landowners or land operators in the proposed district.⁴³⁶
- By the Texas Water Commission identifying *critical* ground water areas of the State.⁴³⁷

The first mechanism is self-explanatory; the Texas Legislature may create a district on its own initiative.

The process of creating a district by petition by the landowners is similar to the creation of soil conservation districts: the petition requesting creation of a district must be filed and signed by a majority of landowners,⁴³⁸ notice of the petition must be given, and a public hearing must be held;⁴³⁹ findings of public benefit or utility must be completed,⁴⁴⁰ and grant or denial of petition must follow.⁴⁴¹

The provision establishing *critical* ground water areas provides that after an area is designated *critical* by the Texas Water Commission,⁴⁴² the voters have a number of options, including—

- voting to create a new ground water conservation district,
- voting to joint an existing ground water conservation district, or
- voting not to do anything.

However, if the voters reject the creation of a district after being designated as a critical area, the area becomes ineligible to receive State financial assistance (low-interest loans or grants) to develop water supplies or water treatment systems.⁴⁴³

The Texas law also provides for adding certain territory not included in a district into an already existing district by petition,⁴⁴⁴ consolidating two or more districts into one district,⁴⁴⁵ and dissolving a district.⁴⁴⁶

Districts may be formed to conserve, preserve, protect, recharge, and prevent waste of the underground water reservoirs or their subdivisions and to control subsidence caused by ground water withdrawals.⁴⁴⁷ Districts are authorized with both mandatory and encouraged duties.

⁴³⁵TEX. WATER CODE ANN. § 52.022.(1), *amended by Acts 1985*.

⁴³⁶Id. § 52.031, *added by Acts 1985*.

⁴³⁷Id. § 52.052 to 52.056 (West Supp. 1995), *added by Acts 1985*.

⁴³⁸Id. § 52.033. Id. § 52.031 (West Supp. 1995), *added by Acts 1989*. If there are more than 50 landowners in the proposed district, the petition must be signed by at least 50 of those landowners. Id.

⁴³⁹Id. § 52.032 (West Supp. 1995), *added by Acts 1989*.

⁴⁴⁰Id. § 52.033, *added by Acts 1989*.

⁴⁴¹Id. § 52.033.

⁴⁴²Id. § 52.053 (West Supp. 1995), *added by Acts 1989*.

⁴⁴³Id. § 52.063, *renumbered by the 1989 amendment from § 52.0611, amended by Acts 1991*.

⁴⁴⁴Id. § 52.525, *added by Acts 1989, and amended by Acts 1991, 72nd Leg., ch. 701, § 8, eff. Sept. 1, 1991*.

⁴⁴⁵Id. § 52.541 (West Supp. 1995), *added by Acts 1989*.

⁴⁴⁶Id. § 52.501, *renumbered from § 52.401 by Acts 1985, amended by Acts 1989*. The 1989 amendment repealed subsec. (c) of the former § 52.401, which provided that the section did not apply to any district composed of territory in more than one county.

⁴⁴⁷Id. § 52.021 (West Supp. 1995).

Mandatory duties for ground water conservation districts include:

- Develop a comprehensive management plan for the most efficient use of ground water and for controlling and preventing waste of ground water and subsidence.⁴⁴⁸
- Keep records of drilling, equipping, and completing of water wells and of the production and use of ground water.⁴⁴⁹
- Require that accurate drillers' logs be kept of water wells and that copies of drillers' logs and electric logs be filed with the district,⁴⁵⁰
- Require a permit for the drilling, equipping, or completing of wells that produce more than 25,000 gallons per day,⁴⁵¹ or for substantially altering the size of wells or well pumps, or for all of these operations.⁴⁵²
- Provide information to the commission and water development board regarding its plans and activities in conserving and protecting ground water resources.⁴⁵³
- Perform an annual audit of financial records,⁴⁵⁴ which must be open to inspection.⁴⁵⁵
- Operate on the fiscal year basis.⁴⁵⁶
- Prepare and approve an annual budget.⁴⁵⁷
- Hold a public hearing on the annual budget.⁴⁵⁸
- Publish all their rules and regulations.⁴⁵⁹

Encouraged activities of the ground water conservation districts are as follows:

- Make and enforce rules to conserve, preserve, protect, recharge, control subsidence, and prevent ground water waste.⁴⁶⁰
- Carry out research projects, develop information, and determine the limitations that should be made on withdrawing ground water.⁴⁶¹
- Develop plans for the most efficient use of ground water.
- Collect information regarding the use of ground water and the practicability of recharging a ground water reservoir.⁴⁶²

⁴⁴⁸TEX. WATER CODE ANN. § 52.160.

⁴⁴⁹Id. § 52.164. The 1985 amendment renumbered this section from former § 52.112 and in the text of this section substituted "shall" for "may". In other words, this duty was not mandatory before the 1985 amendment.

⁴⁵⁰Id. § 52.164. The 1985 amendment renumbered this section from the former § 52.112 and in the text substituted "shall" for "may". In other words, this duty was not mandatory before the 1985 amendment.

⁴⁵¹Id. § 52.168. The 1985 renumbered this section from the former § 52.116 and substituted "25,000" for "100,000", meaning that, permit may be needed only if a well is expected to produce 100,000 gallons of water per day. For other exceptions from permit requirement, *see* § 52.170.

⁴⁵²TEX. WATER CODE ANN. § 52.166. The 1985 amendment renumbered this section from the former § 52.114 and it substituted "shall" for "may", meaning that, this duty was not mandatory before the 1985 amendment.

⁴⁵³Id. § 52.173.-This section is added by Acts 1985, 69th Leg., ch. 133, § 5.01 and was slightly amendment in 1989.

⁴⁵⁴Id. § 52.252 (West Supp. 1995), *added by* Acts 1985, 69th Leg., ch. 133, § 5.01.

⁴⁵⁵Id. § 52.253, *added by* Acts 1985.

⁴⁵⁶Id. § 52.251.

⁴⁵⁷Id. § 52.254, *added by* Acts 1985.

⁴⁵⁸Id. § 52.255.

⁴⁵⁹Id. § 52.152, *renumbered from* § 52.102 by Acts 1985.

⁴⁶⁰Id. § 52.151 (West Supp. 1995).

⁴⁶¹Id. § 52.161.

⁴⁶²Id. § 52.162.

- Publish its plans and the information it develops, bring them to the attention of the users of ground water in the district, and encourage the users to adopt and use them.⁴⁶³
- Provide the spacing for water wells and regulate the production of water from wells.⁴⁶⁴
- Enforce the Underground Water Conservation District law and its rules by injunction, mandatory injunction, or other appropriate remedy in a court of competent jurisdiction.⁴⁶⁵
- Acquire land and construct facilities and equipment to recharge the aquifer.⁴⁶⁶
- Purchase, well, transport, and distribute surface water or ground water for any purpose.⁴⁶⁷
- Exercise the power of eminent domain to acquire by condemnation a fee simple or other interest in property located within the district if the property interest is necessary to the exercise of the authority conferred by the Underground Water Conservation District Law.⁴⁶⁸
- Make surveys of ground water reservoir or subdivision and surveys of facilities for development, production, transportation, distribution, and use of water.⁴⁶⁹
- Levy taxes annually to pay for bonds, operating, and maintenance expenses.⁴⁷⁰

In addition to the above powers, the ground water conservation districts which were created by the Texas Legislature for specific purposes (i.e., prevention of land subsidence or carrying out a specific recharge project) may have specific powers and duties that were given to them in their enabling legislation.⁴⁷¹

The Texas law provides that the governing body of a district is the board of directors, which consists of not less than 5 and not more than 11 directors elected for a 4-year term.⁴⁷² These directors are elected according to the precinct method; that is, the residents in each elect one member to the board of directors.

precinct.⁴⁷³ Midterm vacancies are filled by appointment of the board until the next election for directors.⁴⁷⁴ The board of directors responsibilities include administering the district's programs, approving rules and regulations related to underground water, and approving the district's annual budget. It is also allowed to hire a staff to conduct daily affairs of the district. The staff may also include a

⁴⁶³TEX. WATER CODE ANN. § 52.163.

⁴⁶⁴Id. § 52.169, *renumbered* from former § 52.117 by 1985 amendment.

⁴⁶⁵Id. § 52.153 (West Supp. 1995). The 1985 amendment renumbered this section from former § 52.103 and inserted "this chapter and".

⁴⁶⁶Id. § 52.155. This section is renumbered from § 52.104 and amended by Acts 1985.

⁴⁶⁷Id. § 52.156. This section is renumbered from § 52.105 and amended by Acts 1985.

⁴⁶⁸Id. § 52.157, *added by* Acts 1985.

⁴⁶⁹Id. § 52.159 (West Supp. 1995), *renumbered and amended by* the 1985 amendment.

⁴⁷⁰Id. § 52.351.

⁴⁷¹D.L. Reddell & J.M. Sweeten, *Management of Ground water Through Underground Water Conservation Districts in Texas*, NON-POINT WATER QUALITY CONCERNS—LEGAL AND REGULATORY ASPECTS, 1989 National Symposium, American Society of Agricultural Engineers 103 (1989).

⁴⁷²TEX. WATER CODE ANN. § 52.1181 (West Supp. 1995), *added by* Acts 1989, eff. Sept. 1, 1989.

⁴⁷³Id. § 52.102 (noting that the precinct method is prescribed by Chapter 12, page 1105, Special Laws, Acts of the 46th Legislature, Regular Session, 1939).

⁴⁷⁴Id. § 52.110 (West Supp. 1995), *added by* Acts 1989.

general manager who has full authority in management and operations of the district's affairs, and is subject only to orders of the board.⁴⁷⁵

Idaho (region 8).—Idaho preserves its ground water through its Ground Water Management Districts law⁴⁷⁶ that provides that a ground water conservation district may be formed by petition to the Department of Water Resources by landowners in the proposed district.⁴⁷⁷

According to this law, a 3-member board of directors will govern each district, where each must be a water user or a representative of a water user within the district.⁴⁷⁸ The first board of directors will be appointed by the director of the Department of Water Resources, where one member will serve for 3 years, one for 2 years, and one for 1 year. Vacancies are filled by appointment.⁴⁷⁹

To manage ground water effectively, districts are charged with the following mandatory duties:

- Manage and conduct the business and affairs of the district.
- Employ and appoint agents, employees, or officers to perform the duties prescribed by districts or by this law.
- Incur indebtedness for the purpose of financing repair or abandonment of wells in the districts.
- Levy assessments for the retirement of indebtedness incurred.
- Contract with owners of wells in the district that require repair or abandonment as ordered by the director of the Department of Water Resources.
- Contract with the director to evaluate proposed contracts with well owners to evaluate the repairs or other work.
- Adopt rules and regulations.
- Accept gifts and grants in furtherance of the purposes of this law.
- Enter upon any land to make inventories, surveys, and monitoring or construction inspections.
- Do any and every lawful act necessary to carry out the provisions of this law.
- Report to the director concerning the operations of the district.
- Submit to the director an annual financial report.⁴⁸⁰

After the formation of a district, water users who are included within the district can file with the board a petition requesting exclusion from the district.⁴⁸¹ Water users must satisfy the grounds for exclusion set forth by the law. The water users

⁴⁷⁵TEX. WATER CODE ANN. § 52.118, *added by Acts 1989*.

⁴⁷⁶Ground Water Management Districts Law, IDAHO CODE § 42-5101 et seq.

⁴⁷⁷Id. § 42-5102.

⁴⁷⁸Id. § 42-5104(1).

⁴⁷⁹Id. § 42-5104(2)-(3).

⁴⁸⁰Id. § 42-5112.

⁴⁸¹Id. § 42-5128.

must show that they either will not be benefited by the functioning of the district⁴⁸² or have not benefited by the functioning of the district.⁴⁸³

Idaho also protects the quality of ground water through its Ground Water Quality Protection Act⁴⁸⁴. This act maintains ground water for beneficial uses such as for drinking water and for industrial and agricultural water supplies.

The act designates the Department of Health and Welfare as the primary agency for coordinating and administering ground water quality protection programs for the State.⁴⁸⁵ Together with the Department of Water Resources, the Department of Agriculture, and the Ground Water Quality Council, these agencies:⁴⁸⁶

- Implement a ground water monitoring plan.⁴⁸⁷
- Prepare an annual report detailing the amount and concentration of pollutants in ground water by location.⁴⁸⁸
- Establish a system or number of systems within the state departments and political subdivisions for collecting, analyzing, and distributing ground water quality data information.⁴⁸⁹
- Develop water and natural resource information systems that are accessible to the public.⁴⁹⁰

Upon consultation with the Ground Water Quality Council, the Board of Health and Welfare may adopt ground water quality standards for contaminants for which the Administrator of the Environmental Protection Agency has fixed drinking water maximum contaminant levels.⁴⁹¹ The board may also adopt standards for contaminants for which the administrator has not established such drinking water maximum contaminant levels provided that they meet with the goals of this act.

The Ground Water Quality Council is responsible for developing and administering a ground water quality protection plan.⁴⁹² This plan shall outline the State's policy for protecting its ground water by considering existing beneficial uses of ground water⁴⁹³ and by identifying programs that protect ground water quality.⁴⁹⁴ The plan involves proposing legislation to protect ground water quality as well as establishing administrative and economic programs for this goal.⁴⁹⁵ Furthermore, the plan includes recommendations for the establishment of a comprehensive ground water monitoring network and for instituting programs to foster public

⁴⁸²IDAHO CODE § 42-5126 (1)(a). Petition based on this ground must be filed within 90 days after the adopting of a resolution to incur indebtedness. Petition filed after this period must show good cause for the delay to be considered.

⁴⁸³Id. § 42-5126(1)(b). It should be noted that petition based on this ground must be filed no later than 5 years after the adoption of a resolution to incur indebtedness.

⁴⁸⁴Id. § 39-102.

⁴⁸⁵Id. § 39-120(1).

⁴⁸⁶Id. § 39-120(2).

⁴⁸⁷Id. § 39-120(2)(a).

⁴⁸⁸Id. § 39-120(2)(b).

⁴⁸⁹Id. § 39-120(2)(c).

⁴⁹⁰Id. § 39-120(2)(d).

⁴⁹¹Id. § 39-120(4).

⁴⁹²Id. § 39-123(1).

⁴⁹³Id. § 39-123(2)(b).

⁴⁹⁴Id. § 39-123(2)(c).

⁴⁹⁵Id. § 39-123(2)(d).

awareness of ground water protection. All State agencies must incorporate this ground water quality protection plan in their programs.⁴⁹⁶

Utah (region 8).—Utah Appropriation Law provides that appropriation of water must be for some useful and beneficial purpose, and, as between appropriators and relying on the doctrine of prior appropriation, the person first in time shall be first in rights.⁴⁹⁷

All persons must apply to the state engineer before commencing the construction, enlargement, extension, or structural alteration of any ditch, canal, well, tunnel, or other distributing works.⁴⁹⁸ After receiving the application, the state engineer must examine and determine whether to issue a temporary permit to appropriate water for beneficial purposes,⁴⁹⁹ or to approve or reject the application.⁵⁰⁰ Moreover, before the application is granted or denied, any person interested in the appropriation may file protest with the state engineer.⁵⁰¹

In addition, the Utah law sets up a priority standard among appropriators that gives appropriators priority among themselves according to the dates of their respective appropriations. Each appropriator is entitled to receive his or her whole supply before any subsequent appropriator can have any right. Furthermore, in times of scarcity, the use for domestic purposes, without unnecessary waste, has preference over use for all other purposes, and the use for agricultural purposes has preference over use for any other purpose except domestic use.⁵⁰²

The Utah Appropriation law provisions that are applicable to wells in all areas of the State are as follows:

- All well and tunnel drillers must report to the state engineer data relating to each well or tunnel failure to comply with this requirement is a class B misdemeanor.⁵⁰³
- All well drillers must be licensed.⁵⁰⁴
- Well drillers may replace an existing well with a replacement well within a radius of 150 feet from the existing well upon first approval by the state engineer.⁵⁰⁵
- All well drillers must comply with the rules enacted by the state engineer under the Appropriation law.⁵⁰⁶

⁴⁹⁶IDAHO CODE § 39-126.

⁴⁹⁷Appropriation, UTAH CODE ANN. § 73-3-1 (1989 & Supp. 1994).-For a description of the early history of Utah's water laws, see *Little Cottonwood Water Co. v. Kimball*, 76 Utah 243, 289 P. 116 (1930). For an interesting article on the priority in ground water, see *Water Quality Control: The Reality of Priority in Utah Ground water Management*, 1992 UTAH L. REV. 491.

⁴⁹⁸UTAH CODE ANN. § 73-3-2 (Supp. 1994).

⁴⁹⁹Id. § 73-3-5.5 (1989).

⁵⁰⁰Id. § 73-3-8.

⁵⁰¹Id. § 73-3-7.

⁵⁰²Id. § 73-3-21.

⁵⁰³Id. § 73-3-22.

⁵⁰⁴Id. § 73-3-25(1).

⁵⁰⁵Id. § 73-3-28 (1989).

⁵⁰⁶Id. § 73-3-25(2).

Oregon (region 9).—Oregon State Legislature controls ground water through the enactment of its Ground Water Act of 1955⁵⁰⁷ that recognizes and declares that a reasonable control of water belongs to the public. To preserve public welfare, safety, and health, it states the following ground water protection policies:

- Provision must be made for the final determination of relative rights to appropriate ground water everywhere within Oregon and of other matters with regard thereto through a system of registration, permits, and adjudication.⁵⁰⁸
- Rights to appropriate ground water and priority thereof must be acknowledged and protected, except when, under certain conditions, the public welfare, safety, and health require otherwise.⁵⁰⁹
- Beneficial use without waste, within the capacity of available sources, must be the basis, measure, and extent of the right to appropriate ground water.⁵¹⁰
- All claims to rights to appropriate ground water must be made a matter of public record.⁵¹¹
- Adequate and safe supplies of ground water for human consumption must be assured, while conserving maximum supplies of ground water for agricultural, commercial, industrial, thermal, recreational, and other beneficial uses.⁵¹²
- The location, extent, capacity, quality, and other characteristics of particular sources of ground water must be determined.⁵¹³
- Reasonable stable ground water levels must be determined and maintained.⁵¹⁴
- Depletion of ground water supplies below economic levels, impairment of natural quality of ground water by pollution, and wasteful practices in connection with ground water must be prevented or controlled within practicable limits.⁵¹⁵
- Whether wasteful use of ground water, impairment of or interference with existing rights to appropriate surface water, declining ground water levels, alteration of ground water temperatures that may adversely affect priorities or impair the long-term stability of the thermal properties of the ground water, interference among wells, thermal interference among wells, overdraw of ground water supplies or pollution of ground water exists or impends, controlled use of the ground water concerned must be authorized. When such voluntary joint action is not taken or is ineffective, controlled use must be imposed under voluntary joint action by the Water Resources Commission, by the ground water users concerned whenever possible, and by the commission under the police power of the State.⁵¹⁶
- Location, construction, depth, capacity, yield, and other characteristics of and matters in connection with wells must be controlled in accordance with the purposes set forth in this section.⁵¹⁷

⁵⁰⁷Ground Water Act of 1955, OR. REV. STAT. § 537.505 to 537.799 (1991).

⁵⁰⁸Id. § 537.525(1).

⁵⁰⁹Id. § 537.525(2).

⁵¹⁰Id. § 537.525(3).

⁵¹¹Id. § 537.525(4).

⁵¹²Id. § 537.525(5) (1991).

⁵¹³Id. § 537.525(6).

⁵¹⁴Id. § 537.525(7).

⁵¹⁵Id. § 537.525(8).

⁵¹⁶Id. § 537.525(9).

⁵¹⁷Id. § 537.525(10).

- All activities in the State that affect the quality or quantity of ground water must be consistent with the goal set forth in Ground Water law.⁵¹⁸

The act exempts the use of ground water from the law for—
stockwatering purposes;⁵¹⁹

watering any lawn or noncommercial garden not exceeding one-half acre in size;⁵²⁰

watering the lawns, grounds, and fields not exceeding 10 acres in area of schools located within a critical ground water area;⁵²¹

single or group domestic purposes in an amount not exceeding 15,000 gallons a day;⁵²²

down-hole heat exchange purposes;⁵²³ or
5,000 gallons a day.⁵²⁴

However, the use of the above exempt ground water use must be beneficial and constitute a right to appropriate ground water equal to that established by issuance of a ground water right certificate.⁵²⁵ Moreover, after declaration of a ground water management area, all persons must apply for water permits even if the use of ground water falls within the exempt provisions (fee for such permit is not required).⁵²⁶

The Oregon law sets forth the following situations where the Water Resources Commission may designate an area a critical ground water area:⁵²⁷

- Ground water levels in the area in question are declining or have declined excessively.
- A pattern of substantial interference is present between wells within the area in question.
- A pattern of or potential interference exists between wells of ground water claimants or appropriators within the area in question with the production of geothermal resources from an area as regulated under the Water Improvement Districts Law.
- A pattern of substantial interference between wells within the area in question and—
an appropriator of surface water whose water right has an earlier priority date, or
a restriction imposed on surface water appropriation or a minimum perennial stream flow that has an effective date earlier than the priority date of the ground water appropriation.

⁵¹⁸OR. REV. STAT. § 537.525(11) (1991).

⁵¹⁹Id. § 537.545(1)(a).

⁵²⁰Id. § 537.545(1)(b).

⁵²¹Id. § 537.545(1)(c).

⁵²²Id. § 537.545(1)(d).

⁵²³Id. § 537.545(1)(e) (1991).

⁵²⁴Id. § 537.545(1)(f).

⁵²⁵Id. § 537.545(2).

⁵²⁶Id. § 537.545(4).

⁵²⁷Id. § 537.730.

- Ground water temperatures in the area in question are expected to be, are being, or have been substantially altered.
- The purity of the ground water in the area in question has been or reasonably may be expected to become polluted to an extent contrary to public welfare, health, and safety.
- The available ground water supply in the area in question is being or is about to be overdrawn.

The Oregon Ground Water Act provisions that apply to wells in all areas of the State are as follows:

- Registration is required and a permanent record must be kept. Failure of such registration statement creates a presumption that such claim has been abandoned.
- Permits are required for new and replacement wells in new locations.
- Water well constructors must be licensed.
- Well construction contractors must have a surety bond or an irrevocable letter of credit issued by a commercial bank.
- Well construction contractors must file a report to the Water Resources Commission before commencing the construction of the well.
- Well owners or operators must conduct a pump test at least once every 10 years and report the results of that test to the Water Resources Commission. Well owners or operators whose ground water use falls within the exempt uses provisions are exempt from this requirement.

The Oregon law is unique in that it declares that because the Oregon Legislative Assembly finds that ground water protection is a matter of statewide concern, no ordinance, order or regulation can be adopted by a local government to regulate the inspection of wells, construction of wells or water well constructors subjection to regulation by the Water Resources Commission or the Water Resources Department under the Water Well Constructions law.⁵²⁸

In addition to any other remedies provided by law, the Water Resources Commission may impose a civil penalty against any person who, in the construction of a well, violates any provision of the Oregon Ground Water Act.⁵²⁹

California (region 10).—Acknowledging that ground water is subject to impairment in quality and purity,⁵³⁰ directly caused by improper construction and abandoned water, cathodic protection, and ground water monitoring wells,⁵³¹ the California Legislature enacted the Water Wells and Cathodic Protection Wells law to address this problem.⁵³²

⁵²⁸Water Well Constructors law is covered in OR. REV. STAT. § 537.747 to 537.795 (1991).

⁵²⁹Id. § 537.792.

⁵³⁰Water Wells and Cathodic Protection Wells, CAL. WATER CODE § 13700 (West 1992).

⁵³¹Id. § 13701.

⁵³²Id. § 13700-13806.

The law defines *water well* as “any artificial excavation constructed by any method for the purpose of extracting water from, or injecting water into, the underground,” and specifically excludes from the definition, thus exempts from the law—

oil and gas wells, or geothermal wells constructed under the jurisdiction of the Department of Conservation, or

wells used for the purpose of dewatering excavation during construction or stabilizing hillsides or earth embankments.⁵³³

However, all persons who engage in conversion of wells are subjected under this Water Wells and Cathodic Protection Wells law.⁵³⁴

Cathodic protection well is “any artificial excavation in excess of 50 feet constructed by any method for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground.”⁵³⁵

Furthermore, *monitoring well* is “any artificial excavation by any method for the purpose of monitoring fluctuations in ground water levels, quality of ground water, or the concentration of contaminants in ground water.”⁵³⁶

Under this law, all persons who intend to dig, bore, drill, deepen, or re-perforate, abandon, or destroy a water well, cathodic protection well, or monitoring well must file a report to the department. The report includes—

the well's description,

proposed date of well's construction,

the intended use of the well, and

the work to be done and description of construction type.⁵³⁷

After completion of any of the described activities, such persons must also file a completion report, describing—

the description of the well site,

a detailed log of the well,

the description of type of construction,

the details of perforation,

methods used for sealing off surface or contaminated water,

methods for preventing contaminated water,

well driller's signature, and

other requirements the department may require.⁵³⁸

However, the law exempts all wells constructed for the purpose of monitoring the presence of ground water that has adversely affected, or threatens to adversely affect, crop root zones, from all reporting requirements.⁵³⁹

⁵³³CAL. WATER CODE § 13710.

⁵³⁴Id. § 13753.

⁵³⁵Id. § 13711.

⁵³⁶Id. § 13712.

⁵³⁷Id. § 13750.

⁵³⁸Id. § 13751.

⁵³⁹Id. § 13712.5.

All persons must have a water well contractor's license before undertaking any activity such as digging, boring, drilling, deepening or re-perforating, abandoning, or destroying a water well, cathodic protection well, or a monitoring well.⁵⁴⁰

After conducting mandatory studies and investigations,⁵⁴¹ the department must file a report, recommending standards for water well, protection well, and monitoring well construction, maintenance, abandonment, and destruction, to the appropriate regional water quality control board and to the State Department of Health Services.⁵⁴² Moreover, the State board is required to adopt a model water well, cathodic protection well, and monitoring well drilling and abandonment ordinance implementing the department's standards.⁵⁴³ If such ordinance is not adopted, the State board will circulate the model ordinances to all cities and counties.⁵⁴⁴

After receiving such report, the regional board must hold a public hearing to establish well standards for the area involved.⁵⁴⁵ Each county, city, or water agency must also adopt an ordinance that meets or exceeds such standards.⁵⁴⁶ If an agency fails to do so, the model ordinance adopted by the State board will take effect and will be enforced by the county or city and have the same force and effect as if adopted as a county or city ordinance.⁵⁴⁷

If the regional board finds that the standards are necessary in any area to protect the quality of water used for any beneficial use, it will determine the area to be involved and report to each affected county and city in the area.⁵⁴⁸ After receiving the report, the affected county and city must adopt an ordinance establishing standards for the area designated by the regional board.⁵⁴⁹ If a county or city fails to do so, the standards will take effect and be enforced.⁵⁵⁰

The California Legislature also enacted the Pesticide Contamination Prevention Act to reduce ground water pollution⁵⁵¹ caused by pesticides because "pesticide contaminants and other organic chemicals are being found at an ever increasing rate in underground drinking water supplies."⁵⁵²

The law requires all persons registering an economic poison for agricultural use to submit to the director the following information⁵⁵³—

water solubility;

vapor pressure;

the octanol-water partition coefficient;

⁵⁴⁰CAL. WATER CODE § 13750.5.

⁵⁴¹Id. § 13800.

⁵⁴²Id. § 13800.

⁵⁴³Id. § 13801(b).

⁵⁴⁴Id. § 13801(b).

⁵⁴⁵Id. § 13801(a). The regional board may hold a public hearing with respect to any area regardless of whether it has received the report or not, if it has the necessary information that standards may be needed. Id.

⁵⁴⁶Id. § 13801(c).

⁵⁴⁷Id. § 13801(d).

⁵⁴⁸Id. § 13802.

⁵⁴⁹Id. § 13803.

⁵⁵⁰Id. § 13805.

⁵⁵¹Id. § 13141.

⁵⁵²Id. § 13141(c).

⁵⁵³Id. § 13143.

the soil adsorption coefficient, is “a measure of the tendency of economic poisons, or their biologically active transformation products, to bond to the surfaces of soil particles”;⁵⁵⁴

Henry’s Law constant, is “an indicator of the escaping tendency of dilute solutes from water and is approximated by the ratio of the vapor pressure to the water solubility at the same temperature”;⁵⁵⁵ and

dissipation studies, including field dissipation, aerobic and anaerobic soil metabolism, hydrolysis, and photolysis.

This information must be submitted for each active ingredient in each registered economic poison.⁵⁵⁶ This information must also be furnished if the State Department of Health Services submits a written request to the director specifying why they require this information. However, the director can deny the request of the State Department of Health Services if he or she does not feel that the information will further the purposes of this article.⁵⁵⁷

Any registrant of an economic poison whose information contains a ground water protection data gap shall be subject to a fine not to exceed \$10,000 for each day that the gap exists.⁵⁵⁸ The director determines if such gap exists if, upon examination, he or she concludes that each required study has not been submitted or that they are not valid, complete, and adequate.⁵⁵⁹ To determine the fine, the director considers any circumstances that have prevented the registrant from submitting the necessary information and the extent to which the registrant has attempted to submit this information.

The law also requires the department to establish numerical values for water solubility, soil adsorption coefficient, aerobic and anaerobic soil metabolism, hydrolysis, and field dissipation. These values must be at least equal to the values fixed by the Environmental Protection Agency.⁵⁶⁰ The department may revise these values as necessary to effectively protect ground water provided that the values remain as strict as those of the EPA.

The director is required to establish a Groundwater Protection List of all economic poisons that could potentially pollute ground water.⁵⁶¹ The director must monitor the use of those economic poisons intended to be injected or applied to the soil by chemigation or by ground-based application equipment. Any person who uses an economic poison on the list must submit a form to the agricultural commissioner detailing the use of such poison. Furthermore, all dealers of economic poisons must make quarterly reports to the director of all sales of these products.⁵⁶²

⁵⁵⁴CAL. WATER CODE § 13142.

⁵⁵⁵Id. § 13142.

⁵⁵⁶Id. § 13143.

⁵⁵⁷Id. § 13143.

⁵⁵⁸Id. § 13145.

⁵⁵⁹Id. § 13142.

⁵⁶⁰Id. § 13144.

⁵⁶¹Id. § 13145.

⁵⁶²Id. § 13143.

Tennessee (regions 11 & 12).—Tennessee legislature has controlled ground water activities partially by the Water Wells law.⁵⁶³ To advise and assist the Commissioner of Health and Environment in preparing rules and regulations, it created a board of ground water management. The five members⁵⁶⁴ include two ex officio members—the commissioner of Health and Environment and the director of Water Management—and three persons actively engaged in the drilling of water wells. The three are residences of one of the three geographical grand divisions—Middle Tennessee, East Tennessee, and West Tennessee. The Governor must appoint all five members.⁵⁶⁵

Under the original act, the board of ground water resources would be terminated in 1990. However, this section was amended to extend the board of ground water management's service to the 1999.⁵⁶⁶ The Water Well law provisions that are applicable to wells in all areas of Tennessee are as follows:

- All well drillers and installers or repairers of water well pumps must be licensed.⁵⁶⁷
- All well drillers must, at all times during the drilling of wells, keep posted in a conspicuous location, at or near the wells being drilled, the appropriate certificate as furnished by the commissioner.⁵⁶⁸
- All well drillers, within 30 days after completion of drilling each water well, must report to the commissioner the location of the well, the completion date, and the log of the well.⁵⁶⁹
- Operations of any equipment or machinery in the drilling of water well must be under supervision and management of a licensed water well driller.⁵⁷⁰

Furthermore, to revoke a license,⁵⁷¹ the Tennessee law provides that it will be refused, suspended, or revoked if the license holder has—

intentionally made a material misstatement in the license application;

willfully violated any provision of this chapter or any promulgated rules or regulations;

obtained, or attempted to obtain, the license by fraud or misrepresentation;

been guilty of fraudulent or dishonest practices; or

demonstrated lack of competence as a driller.⁵⁷²

The Commissioner of Health and Environment has authority to:

- Promulgate rules and regulations to effectuate the purposes of this chapter.
- Exercise general supervision over the administration and enforcement of this chapter and all promulgated rules and regulations.
- Make inspections and investigations, collect samples, and carry on research.

⁵⁶³Water Wells Law, TENN. CODE ANN. § 69-11-101 et seq.

⁵⁶⁴Id. § 69-11-107 (1987). For the membership of this board, *see* Id.

⁵⁶⁵Id. § 69-11-107(a) (1987).

⁵⁶⁶Id. § 69-11-107 (Supp. 1993).

⁵⁶⁷Id. § 69-11-102 (1987 & Supp. 1993).

⁵⁶⁸Id. § 69-11-103(2).

⁵⁶⁹Id. § 69-11-103(3).

⁵⁷⁰Id. § 69-11-104 (1987).

⁵⁷¹MISS. CODE ANN. § 51-5-11 (1972)

⁵⁷²TENN. CODE ANN. § 69-11-105(a) (1987).

- Enter or authorize his or her agents to enter at all reasonable times upon any property other than dwelling places for the purposes of conducting investigations or studies or enforcement any provisions of this chapter.
- Bring suit in the name of the department for any violation of the provisions of this chapter, rules and regulations, or orders of the commissioner seeking remedial action.
- Assess civil penalties for violations of the provisions of this chapter, rules, regulations, or standards issued by the commissioner.
- Issue orders as it deems necessary to secure compliance.
- Investigate any alleged or apparent violation of the chapter and to take necessary action to enforce the provision of this chapter.
- Issue licenses according to the provisions of this chapter.⁵⁷³

As in Pennsylvania,⁵⁷⁴ noncompliance with remedial actions will result not only in monetary fines, but in imprisonment as well.⁵⁷⁵

However, the Tennessee law emphasizes that this chapter only applies to wells drilled for the production of water. It does not apply to wells or holes drilled, augured, cored, or dug for quarry blast holes or mineral prospecting, or any purpose other than water production. Moreover, it does not apply to any resident of Tennessee who personally digs a water well at his or her own residential use and the use of the family.⁵⁷⁶

Ground water laws in selected counties

The responding counties—Polk, Nebraska; Armstrong, Hutchinson, and Palmer Counties, Texas—all belong to different ground water conservation districts, in which all water well drilling and ground water irrigation are subject to rules and regulations of the districts.

Polk County, Nebraska (region 5).—Because Polk County belongs to the Central Platte Natural Resources District, it is subject to the Groundwater Management and Protection Act⁵⁷⁷ adopted by the Board of Directors of the Central Platte NRD in 1992.

This act allows the district court in the county in which violations occur to issue cease and desist orders for a number of reasons, including—

- operation of an irrigation system in a manner that allows for improper ground water irrigation runoff;
- construction or operation of an illegal well;
- operation of an irrigation system in a quantity management area in non-compliance with the rotational or allocational use of ground water;
- operation of a cropping system in a designated quality management area in violation of the best management practices;

⁵⁷³TENN. CODE ANN. § 69-11-106.

⁵⁷⁴PA. STAT. ANN. tit. 32, § 645.11.

⁵⁷⁵TENN. CODE ANN. § 69-11-110 (1987 & Supp. 1993).

⁵⁷⁶Id. § 69-11-108 (1987).

⁵⁷⁷Groundwater Management and Protection Act, Central Platte (Nebraska) Natural Resources District, Rule 1, adopted in August 27, 1992.

operation of a cropping system in a designated quality management area without the appropriate certification of completion of education programs as required; and

operation of a cropping system in a designated quality or quantity management area without submitting such reports or forms as may be required.⁵⁷⁸

This act allows the district to designate a Groundwater Supply Management Area following a hearing.⁵⁷⁹ It can manage the use of ground water within the Groundwater Supply Management Area by any of the following ways:⁵⁸⁰

- Allocating the total permissible withdrawal of ground water.
- Rotating the use of ground water.
- Instituting well-spacing requirements.
- Requiring the use of flow meters on wells.

In addition, the district can also designate a Groundwater Quality Management Area following a hearing.⁵⁸¹ Within this area, in addition to the means that the district can use to manage ground water in the Groundwater Supply Management Area, it can manage the activities that affect the ground water quality by the following ways:⁵⁸²

- Use of best management practices.
- Attendance at educational programs designed to protect water quality.
- Submittal of reports or forms.

The following individuals can file a written complaint against a landowner or operator who is allegedly violating any of these rules and regulations, or constructing an illegal well.⁵⁸³

- Person who owns land, leases land, or resides within the district.
- Any nonresident person who can show that the actions of any landowner or operator within the district directly affects him or her.
- District compliance officer.
- The board on its own motion.

In the event of a written complaint where the compliance officer finds that inspection is necessary to determine the validity of the complaint, he or she must inspect the land after giving proper notice to the landowner or operator of the land.⁵⁸⁴ If the landowner or operator agrees that the inspector's findings are true, he or she must submit a schedule of compliance providing discontinuance or nonreoccurrence, or both, of the violation.⁵⁸⁵ If he or she does not agree, a hearing will be conducted.⁵⁸⁶ However, if the compliance officer finds that the inspection is

⁵⁷⁸Groundwater Management and Protection Act, Central Platte (Nebraska) Natural Resources District, Rule 1

⁵⁷⁹Id. Rule 3.

⁵⁸⁰Id. Rule 4.

⁵⁸¹Id. Rule 5.

⁵⁸²Id. Rule 6.

⁵⁸³Id. Rule 7.

⁵⁸⁴Id. Rule 8.

⁵⁸⁵Id. Rules 9 and 10.

⁵⁸⁶Groundwater Management and Protection Act, Central Platte (Nebraska) Natural Resources District, Rule 9.

not necessary, the board must hold a hearing if requested. After the hearing, if the board determines that the landowner or operator of land has violated these rules and regulations, it must adopt an order directing such violator to cease and desist immediately from all activities determined by the board to be violations.⁵⁸⁷

Moreover, this regulation permits agreement between landowners to use irrigation runoff water.⁵⁸⁸ By allowing this type of agreement, both the ground water user whose irrigation runoff water is capable of being captured and the person who is able to use the runoff water benefit from this agreement.

Hutchinson County, Texas (region 6).—About 25 percent of this county is included in the North Plains Water Conservation District. There are no specific county laws, rules, regulations, or ordinances regarding conservation activities within this county.⁵⁸⁹

Palmer County, Texas (region 6).—This county is within the High Plains Underground Water District. The district regulates irrigation water runoff from furrow irrigation of other specific county laws, rules, regulations, or ordinances regarding conservation activities within this county.⁵⁹⁰

⁵⁸⁷Id. Rule 12.

⁵⁸⁸Id. Rule 16.

⁵⁸⁹Memo from Richard Bennett, District Conservationist, Stinnett, Texas, dated 8/9/95 (on file with Liu Chuang, Natural Resource Inventory Division).

⁵⁹⁰Id.