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January 2003
SFR-047/02

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**Texas Water
Development Board**
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**Railroad Commission
of Texas**

**Texas Department
of Health**

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**Texas State Soil and
Water Conservation Board**

**Texas Alliance of
Groundwater Districts**

**Texas Agricultural
Experiment Station**

**Bureau of Economic Geology of
The University of Texas at
Austin**

**Texas Department of
Licensing and Regulation**

**ACTIVITIES OF THE
TEXAS GROUNDWATER
PROTECTION COMMITTEE**

**REPORT TO THE
78TH LEGISLATURE**

Prepared by the
Texas Groundwater Protection Committee

Activities of the Texas Groundwater Protection Committee: Report to the 78th Texas Legislature



Prepared by
Texas Groundwater Protection Committee

SFR-047/02
January 2003



Texas Groundwater Protection Committee

<http://www.tgpc.state.tx.us>

Committee Membership:

Texas Commission on Environmental Quality
Texas Water Development Board
Railroad Commission of Texas
Texas Department of Health
Texas Department of Agriculture
Texas State Soil and Water Conservation Board
Texas Alliance of Groundwater Districts
Texas Agricultural Experiment Station
Bureau of Economic Geology
Texas Department of Licensing and Regulation

Activities of the Texas Groundwater Protection Committee was developed and produced by the Texas Groundwater Protection Committee (TGPC) in fulfillment of requirements in Section 26.405 of the Texas Water Code. While the information contained in the report represents the contribution of each individual participating agency and group, the report as a whole is the work of the Committee and does not necessarily reflect all of the views and policies of each participating organization. The effort was partially funded by the U.S. Environmental Protection Agency.

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EXECUTIVE SUMMARY

This report was prepared for submission to the 78th Texas Legislature by the Texas Groundwater Protection Committee (TGPC). The TGPC prepared the report in accordance with Section 26.405 of the Texas Water Code. The report describes the TGPC's activities for the two preceding years and provides recommendations to improve groundwater protection for Legislative consideration.

The report discusses the TGPC's creation and mandate, membership, and federal involvement and coordination. TGPC activities for the preceding two calendar years include TGPC meetings and presentations, subcommittee and work group activities, rules review, and public record maintenance.

Also discussed are the ongoing efforts to develop and implement the TGPC's educational outreach initiatives, such as the abandoned well closures guidance and video. In addition, the report provides findings from the annual joint groundwater monitoring and contamination reports for 2000 and 2001, as well as information on the development of the state's management plan for the prevention of pesticide contamination of groundwater and on the state's strategy for groundwater protection. The report provides a summary of legislative action taken on the TGPC's recommendations to the 77th Texas Legislature in 2001.

Also included in this report are the TGPC's groundwater protection recommendations for legislative consideration. While these recommendations represent the majority opinion of the membership of the committee, they do not necessarily reflect the views and policies of each participating organization. More detailed information is contained in the discussions on each recommendation. The recommendations, which are not listed in priority order, address groundwater protection, education, and resource needs.

The following three issue areas have been identified:

- # fund for abandoned water well-plugging;
- # educational programs on groundwater needs; and,
- # funding for modeling of groundwater availability.

*Report to the 78th Legislature
Activities of the Texas Groundwater Protection Committee*

RECOMMENDATIONS TO THE 78TH TEXAS LEGISLATURE

Groundwater protection has become an important concern of the general public and local, state, and federal agencies. High-quality groundwater resources are of vital importance to the state's economy and the public health and welfare. As required by Section 26.045 of the Texas Water Code, the Texas Groundwater Protection Committee submits the following groundwater protection recommendations for legislative consideration.

While these recommendations represent the majority opinion of the membership of the Committee, they do not necessarily reflect the views and policies of each participating organization. More detailed information is contained in the discussions which follow. The recommendations, which are not listed in priority order, address groundwater protection, management, education, and their associated resource needs.

Resource Needs

- # Additional resources are needed to establish an abandoned water well-plugging fund to be administered by the Texas Department of Licensing and Regulation.
- # Additional resources are needed by the Texas Cooperative Extension to develop and carry out groundwater educational and assistance programs on domestic water well quality, groundwater conservation, on-site wastewater disposal, and closure of abandoned wells.
- # Additional resources are needed to support the Texas Water Development Board's (TWDB's) continued development, maintenance, and completion of Groundwater Availability Models for the state's major and minor aquifers to provide critical information on the adequacy of groundwater supplies and to ensure project completion by 2004.

Abandoned Water Well-Plugging Fund

Issue

Numerous state and local programs have identified abandoned water wells as having a significant, or potentially significant, negative impact on the quality of groundwater in the state. Resources are not currently available to provide assistance to landowners, groundwater conservation districts, and local governments to plug abandoned wells.

Recommendation

The TGPC recommends that the Legislature provide positive incentives for landowner-initiated closure of abandoned and deteriorated water wells through the establishment of an abandoned well-plugging fund. Further, TGPC recommends that the program be administered by the Texas Department of Licensing and Regulation (TDLR).

Background

Abandoned water wells remain at the top of the list of potential groundwater contamination sources, which landowners can identify and eliminate. Abandoned water wells not only serve as conduits or channels for contamination to reach groundwater, but large diameter wells can also be a hazard to human and animal life. Uncapped, non-cemented, deteriorated or uncased wells provide a direct path to groundwater from activities at the surface. Deteriorated wells completed in more than one water-bearing zone may allow poorer-quality water from one zone to commingle and impact the other(s). Abandoned municipal, industrial, irrigation wells and abandoned rig-supply, domestic or livestock wells, and unplugged test-holes pose threats to groundwater quality. Abandoned water wells exist in every county of the state and impact all of the state's aquifers.

The Abandoned Well Notification and Enforcement Program, administered by the TDLR utilizing the Water Well Driller/Pump Installer Program investigates, compiles, identifies, and processes abandoned water well notification and enforcement cases. The Texas Rural Water Association routinely identifies abandoned wells as having the potential to impact inventoried domestic wells. Groundwater quality degradation, due in part to abandoned water wells, has also been documented by groundwater conservation districts, the Bureau of Economic Geology (BEG), Texas Water Development Board (TWDB) studies, and the Texas Commission on Environmental Quality's (TCEQ's) Wellhead Protection Program. Some groundwater conservation districts are already implementing well-capping and plugging programs.

The exact number of water wells in the state is unknown. However, based on TWDB records, since 1965 (the initial date when well reports were required to be submitted to the state) 618,390 State of Texas Well Reports (water wells) have been submitted (which is not 100 percent of the wells drilled).

No. of State of Texas Well Reports (water wells) received by the TWDB:

- FY 2000 – 21,803
- FY 2001 – 31,857
- FY 2002 – 19,149

It is conservatively estimated that 150,000 of these wells drilled since 1965 are abandoned or deteriorated. A study by the BEG shows the pervasiveness of abandoned wells. The BEG found that in Ellis County, 90 percent of the 811 hand-dug wells, inventoried as part of a field survey of property near the Superconducting Super Collider, had been abandoned. Many of these wells were constructed before 1930.¹

The Texas Water Code Chapter 32 requires landowners or other persons who possess an abandoned or deteriorated well to have the well plugged or capped under standards and procedures adopted by the TDLR (16 Texas Administrative Code Section 76.1004). The Texas Water Code Chapter 32 also authorizes the TDLR to assess administrative and civil penalties against persons who do not comply with the provisions of the chapter. However, these provisions provide little incentive for owners of abandoned wells to voluntarily plug abandoned wells.

Complying with the plugging provisions represents a financial burden to landowners, and unless state incentive is given, landowner-initiated plugging of abandoned wells is unlikely to occur on a broad basis. Also, consideration should be given to the origin of groundwater contamination in the water well to be plugged, if present. In addition, the TDLR has neither sufficient staff nor resources to independently search for and identify abandoned wells and bring administrative or civil proceedings against their owners. Educational efforts, such as the TGPC's *Landowner's Guide to Plugging Abandoned Water Wells* and associated video, may initiate some abandoned well-plugging. However, a funding source to assist landowners with abandoned well-plugging efforts would result in an increase in the number of well-pluggings and thus decrease the threats to groundwater quality.

Well-plugging costs to landowners (well owners) could range from approximately \$100 to in excess of \$120,000 per well. Cost is based on well depth, size of casing, and complexity of properly plugging the well in compliance with the water well-plugging specifications in TDLR rules.

The establishment of an abandoned well-plugging fund, based on the State Well-Plugging Fund model administered by the Texas Railroad Commission would assist in efforts to plug wells that are not only conduits

¹The Texas Journal of Science - Vol. 46, No. 4, 1994, pp. 356-357

for contamination to reach groundwater, but also a possible hazard to human and animal life. The abandoned well-plugging fund could be a pilot project where in, the TDLR in conjunction with groundwater conservation districts and with the advice of the TGPC would prioritize the abandoned and/or deteriorated water wells with regard to the potential for impacts to groundwater quality and human health. Fund disbursement would be contingent upon this prioritization and the landowner's assets.

The development of the plugging fund would provide criteria for the landowner or person possessing the abandoned or deteriorated water well who "does not have sufficient assets to plug the well." When making application for abandoned water well-plugging fund disbursement, the applicant would be required to submit a signed and notarized affidavit stating that they are financially incapable of plugging the well.

The development of the plugging fund would also provide for a disbursement ceiling approved by the TDLR executive director. Requests for amounts above the set ceiling would require TDLR's Commission approval.

Assistance to Homeowners with Domestic Drinking Water Wells and On-Site Wastewater Disposal Systems

Issue

Rural homeowners and suburban homeowners rely to a large extent on domestic drinking water wells and on-site wastewater disposal systems. Adequate testing of domestic drinking water wells and proper maintenance of on-site septic systems is critical to ensuring the health of the rural population.

Drinking Water Wells

Virtually all water used in rural homes is from groundwater. However, unlike public drinking water systems, domestic water wells are rarely tested for naturally occurring hazardous substances such as radionuclides, arsenic, and other contaminants. These substances are known to occur in groundwater in parts of Texas at levels high enough to have potential health effects.

On-Site Wastewater Disposal Systems

On-site wastewater disposal systems have a failure rate of approximately 13 percent in Texas. Inadequately functioning or failing systems can contribute to contamination of groundwater with nitrates, harmful bacteria, and viruses.

Recommendation

Drinking Water Wells

A better understanding of the contamination issues facing private well owners is needed. Water quality sampling strategies that target the voluntary sampling of private wells need to be developed and implemented, especially in areas already known or suspected to be contaminated or in aquifers which are known to contain high levels of naturally occurring constituents that are of concern.

High costs associated with the sampling and analysis of private water wells can be a burden for some individuals on fixed or low incomes. The TGPC recommends that the Legislature fund a pilot cost-share program to assist rural homeowners with the costs associated with complex water sampling and analysis needs.

The pilot program would be targeted to an area that is known or suspected of having naturally occurring constituents of concern in the aquifer. The cost share program could be administered locally through either a local groundwater conservation district or Texas Cooperative Extension. Based on the sampling results, information could be disseminated to the public to allow private well owners to make informed choices about additional sampling needs, treatment strategies, or alternative drinking water sources.

Costs associated with sampling and testing for water wells for the naturally occurring contaminants can range from around \$50 for arsenic to several hundred dollars for radionuclides. Additional costs associated with the administration of the project, the educational delivery of information related to sampling technique, and the follow-up on sample analyses interpretation and corrective action recommendations would be an additional \$120,000 per year. This amount would be used to provide personnel for program delivery, program supplies, and travel.

On-Site Wastewater Disposal Systems

Due to the high failure rate of on-site wastewater systems and the problems that such failures pose to human and environmental health, the TGPC recommends that the state continue to support the efforts of the On-site Wastewater Treatment Research Council, the Texas Cooperative Extension, the TCEQ's on-site wastewater program, and local governments in their efforts to develop and deliver effective educational material that addresses OSSF maintenance in order to prevent failures. In addition, the Legislature may consider directing the government agencies involved in OSSF regulation and outreach to develop programs specially designed to reach and serve the state's high growth counties.

Background

Drinking Water Wells

The U.S. Census from 1990 reported private supplies in Texas were used by 691,863 households based on a total of 7,108,999 households statewide (9.7 percent).² According to the census, approximately 92.5 percent of private water supplies are used by non-farm households. Users of private water supplies decreased as a percentage of population from 11.9 percent in 1970 to 8.1 percent in 1990, even though the absolute number of people using private water supplies increased. In recent years, there has been a proliferation of domestic wells in suburban and rural areas due to rapid population growth in developments outside the service area of local drinking water providers.

There are no specific programs which routinely examine the quality of water being consumed by Texans utilizing these private/domestic wells. Surveys of the groundwater quality of private wells in Texas are rare, however; studies that have been conducted by the various agencies have indicated that both man-made and naturally occurring contaminants, such as fecal coliform, nitrate, radioactive nuclides, pesticides and pesticide degradation byproducts, arsenic, and other heavy metals, have been found in some domestic wells at levels which exceed health based maximum contaminant levels (based upon a lifetime exposure to the constituent).

Current well construction standards for domestic wells will protect the water source from surface or very shallow groundwater contamination, but will not address naturally occurring contaminants or contamination in the targeted aquifer that migrates from another area due to nonpoint source contamination. Chemical testing at the time the well is drilled is usually restricted to simple inorganic constituents, such as total dissolved solids and for coliforms and sometimes nitrate. It is rare for a water well driller or a private homeowner to test for radioactive constituents, arsenic, or organic constituents because of the expense.

If a private well owner is aware of the presence and characteristics of contamination in his well or naturally occurring problems in the area, then existing treatment technologies, such as softeners, reverse osmosis, and carbon filters are often effective and can be recommended based on known water quality results. Awareness of the type and concentration of the contamination would allow the homeowner to try treatment or to utilize alternate drinking water sources, such as drilling a new well or using bottled water. In some areas where radionuclides are prevalent, release of radon gas into the home from washing, bathing, and other water use activities could also be an important source of contact.

² The U.S. Census did not survey for similar information during the 2000 census.

On-Site Wastewater Disposal

The U.S. Environmental Protection Agency (EPA) estimates, that nationwide, 40 percent of new development utilizes on-site treatment systems. Over 25 million homes, representing almost 25 percent of the population uses on-site treatment and half of these systems are 30 years old. In 2001, over 46,300 permits were issued for on-site wastewater disposal systems in Texas.

An on-site wastewater system requires maintenance in order to ensure proper operation and environmental protection. Unlike a centralized sewer system maintained by a city or water district, maintenance of an on-site system is the responsibility of the homeowner. According to the Texas On-Site Wastewater Treatment Council, 13 percent of the state's on-site wastewater disposal systems are chronically malfunctioning. Inadequate OSSF owner education has been cited as one of the principal causes of on-site wastewater system failures. In a survey of local entities implementing the state's on-site wastewater program, 73 percent reported that they did not believe that OSSF owners received adequate education regarding their systems.

The failure rate cited above combined with the increasing number of new on-site systems presents special challenges to state's counties experiencing rapid population growth. Much of the growth in these counties is in unsewered areas and would require OSSF systems for wastewater disposal. In fact, the majority of the recent on-site wastewater disposal system installations have occurred in the counties adjacent to the state's largest cities. For example, over 13,000 on-site wastewater disposal systems have been installed in Montgomery County, north of Houston, since 1994.

Groundwater Availability Models (GAM) Funding

Issue

Groundwater Availability Models (GAMs) provide reliable and timely information on groundwater availability to the citizens of Texas as they consider the adequacy of supplies over a 50-year planning period. The TWDB initiated GAM development with funding provided in the 76th Legislature for planning that began under Senate Bill 1, 75th Legislature. However, available funding will not allow completion of models of the major and minor aquifers. Additional funding for Fiscal Year 2004 and beyond is needed to complete GAMs for the state's major and minor aquifers.

Recommendation

The TGPC recommends that the Legislature continue funding the GAM program to ensure completion of the models for the major and minor aquifers of the state and to maintain the completed models.

Background

In Senate Bill 2, the 77th Legislature amended Section 16.012 of the Water Code to require that the executive administrator of the TWDB to "...obtain or develop groundwater availability models for major and minor aquifers in coordination with groundwater conservation districts and regional water planning groups." The Legislature also required that the models of the major aquifers be completed not later than October 1, 2004. The purpose of GAM is to provide reliable and timely information on groundwater availability to the citizens of Texas to ensure adequate supplies or recognize inadequate supplies over a 50-year planning period. Numerical groundwater flow models of the major aquifers in Texas will be used to make this assessment of groundwater availability. The expectation is that GAM will (1) include substantial stakeholder input; (2) result in standardized, thoroughly-documented, and publicly available numerical groundwater flow models; and (3) provide predictions of groundwater availability through 2050, based on current projections of groundwater usage and future demands during normal and drought-of-record conditions. GAM will provide the tools to support and enhance groundwater conservation district management plans, regional water plans, and the state water plan.

The first round of the GAM program will be completed January 2003 and includes the Carrizo-Wilcox, Gulf Coast, and Ogallala aquifers. In a parallel effort, TWDB staff are developing models for the Edwards-Trinity Plateau, Cenozoic Pecos Alluvium, Gulf Coast (Lower Rio Grande Valley), and Edwards (northern segment) aquifers. In addition, models have already been completed for the Trinity (Hill Country), Edwards (Barton Springs segment), and Ogallala (northern) aquifers. The Edwards Aquifer Authority is working with the U.S. Geological Survey (USGS) to develop a new groundwater model for the San Antonio segment of the Edwards aquifer (TWDB is providing technical advice) to be completed in 2003. The El Paso Water Utility has worked with the USGS to develop a model of the Hueco Bolson aquifer. The report for this model is currently in USGS review. TWDB staff finished a model of the Trinity aquifer in the Hill Country in 2000, and models of the northern part of the Ogallala aquifer and the Barton Springs segment of the Edwards aquifer were delivered in December of 2001. These models are posted on the TWDB Web page. Work will start in fall of 2002 on models of the (northern) Trinity, Woodbine, Seymour, Queen City, Sparta, Igneous, and West Texas Bolsons aquifers.

The purpose of this recommendation is to provide funding for continued completion, development, and maintenance of GAM beyond Fiscal Year 2003. This continued development and maintenance will allow for refinement of aquifer characteristics such as hydraulic parameters, surface-groundwater interactions, recharge, pumping characteristics, and boundary conditions. This data will be used to provide active updates of GAM input data, new groundwater conservation district data, and provide new information to the Groundwater Conservation Districts and Regional Water Planning Groups.

Funds will be used, in part, to support the transfer of GAM models and related technology to the Groundwater Conservation Districts and other local and regional entities. One of the goals of the GAM program is to make interactive modules available over the Internet for end users to be able to run the models remotely. Ultimately, the development of GAM will be used to create the necessary link with the surface water availability models (WAM) being developed by TCEQ.

In summary:

- # GAM will assist Groundwater Conservation Districts and Regional Water Planning Groups to plan future water supplies and develop more realistic drought management plans for areas dependant on groundwater.
- # GAM will assist Regional Water Planning Groups in the evaluation of water management strategies for Senate Bill 1, 75th Legislature, water supply planning.
- # GAM will be used to support Priority Groundwater Management Areas (PGMA) designation.
- # GAM will be a public process and will include input from all levels of the public and private sector.
- # Computer models of the major aquifers resulting from GAM are scheduled to be completed by October 2004.
- # Each of the GAM models will be thoroughly documented and available to the public over the Internet.
- # GAM will be completed by the Texas Water Development Board staff and its contractors.
- # The GAM program will result in a greatly improved understanding of groundwater resources in the state.

INTRODUCTION

Groundwater is a vitally important resource in Texas. It is a major source of the water used by Texans for domestic, municipal, industrial, and agricultural purposes. In 1999, Texans used about 16 million acre-feet of water, of which 9.3 million acre-feet, or 58 percent, was derived from groundwater sources. Approximately 78 percent of groundwater use was for irrigation, with the remainder used for municipal supplies, rural and domestic consumption, rural livestock, electric utility, and industry. In 1999, approximately 36 percent of municipal water in Texas was obtained from groundwater sources.

The major and minor aquifers within the state furnish this vast groundwater resource. These aquifers underlie approximately 76 percent of the state's 266,807 square mile surface area. Major aquifers are defined as producing large quantities of water in a comparatively large area of the state, whereas minor aquifers produce significant quantities of water within smaller geographic areas or small quantities in large geographic areas. Minor aquifers are very important, as they may constitute the only significant source of water supply in some regions of the state. Nine major aquifers and 21 minor aquifers have been delineated within the state. Figures 1 and 2 illustrate the geographic distribution of the state's major and minor aquifers. The state's major and minor aquifers are composed of many rock types, including limestones, dolomites, sandstones, gypsum, alluvial gravels, and igneous rocks. Other undifferentiated, local aquifers may represent the only source of groundwater where major or minor aquifers are absent. These local aquifers, which provide groundwater that is utilized for all purposes, vary in extent from being very small to encompassing several hundred square miles.

Creation and Mandate

In March 1985, the Texas Department of Water Resources, predecessor to the Texas Commission on Environmental Quality (TCEQ) and the Texas Water Development Board (TWDB), received a grant from the U.S. Environmental Protection Agency (EPA) to improve coordination of groundwater protection activities undertaken by state agencies. In response to this federal mandate, the interagency Groundwater Protection Committee was established.

The Texas Groundwater Protection Committee (TGPC) was formally created by the 71st Legislature in 1989. The TGPC was created to bridge gaps among existing state water and waste regulatory programs in order to focus protection on the groundwater resource and to optimize water quality protection by improving coordination among agencies involved in

groundwater activities. House Bill 1458 (codified as sections 26.401 through 26.407 of the Texas Water Code) established the TGPC and outlined its powers, duties, and responsibilities. Upon creation, the TGPC effectively replaced and continued the efforts of the predecessor Groundwater Protection Committee.

The state's groundwater protection policy was adopted by the Legislature as part of the Act that created the TGPC. The policy sets out nondegradation of the state's groundwater resources as the goal for all state programs. The state's groundwater protection policy recognizes:

- # the variability of the state's aquifers in their potential for beneficial use and susceptibility to contamination,
- # the importance of protecting and maintaining present and potentially usable groundwater supplies,
- # the need for keeping present and potential groundwater supplies reasonably free of contaminants for the protection of the environment and public health and welfare, and
- # the importance of existing and potential uses of groundwater supplies to the economic health of the state.

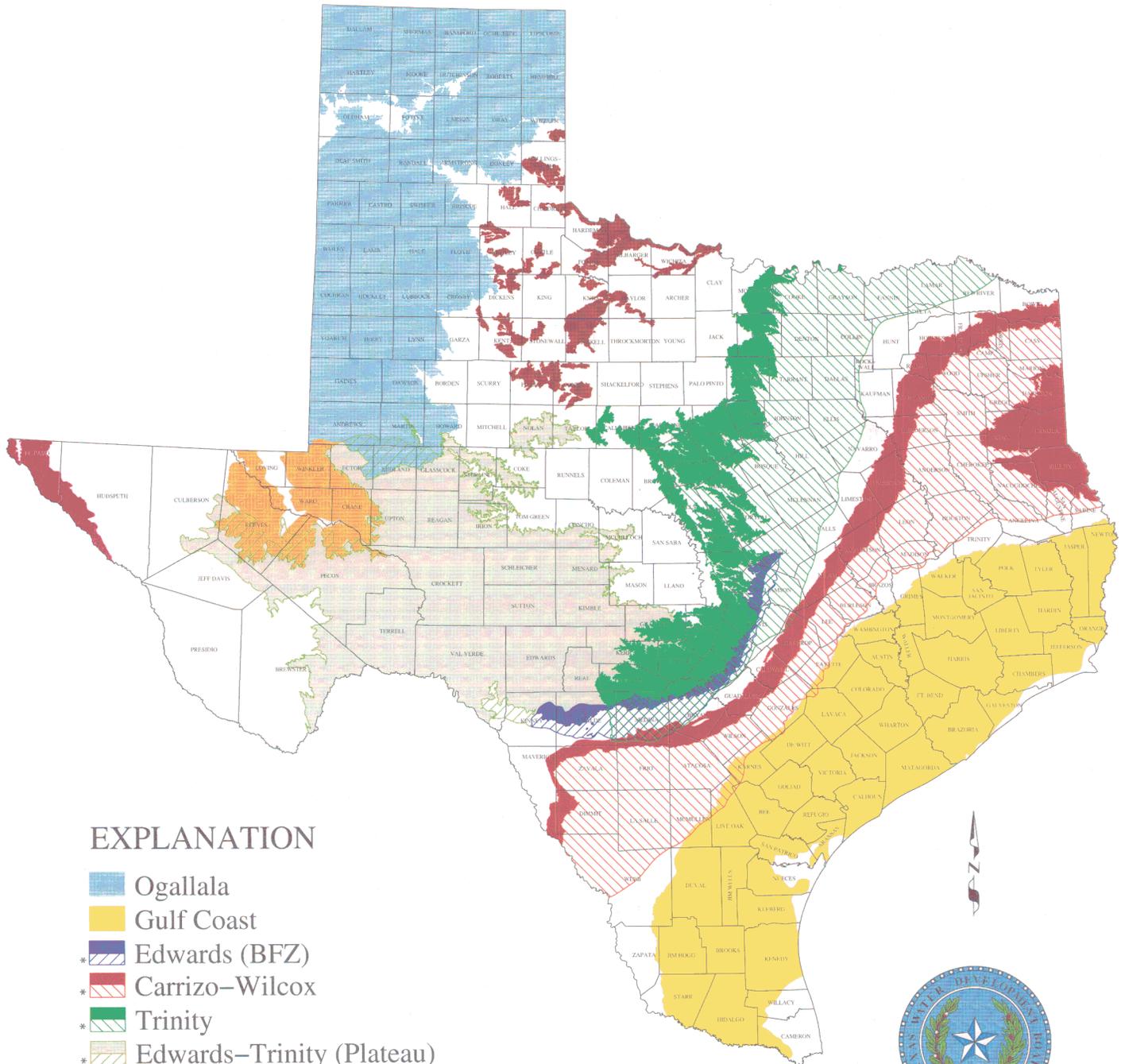
The policy states that discharges of pollutants, disposal of wastes, and other regulated activities be conducted in a manner that will maintain present uses and not impair potential uses of groundwater or pose a public health hazard. The use of the best professional judgment by the responsible state agencies in attaining the goal and policy is also recognized.

The TGPC actively seeks to implement this policy by identifying opportunities to improve existing groundwater quality programs and promote coordination between agencies. The TGPC also strives to identify areas where new or existing programs could be enhanced to provide additional needed protection. The major responsibilities of the TGPC are listed in Table 1.

TGPC Membership

The Texas Water Code, Section 26.403, identifies the agencies listed in Table 2 for TGPC membership. The TCEQ is designated as the lead agency, with the Executive Director designated as the TGPC's chairman. The Executive Administrator of the Texas Water Development Board is designated as the TGPC's vice chairman.

MAJOR AQUIFERS OF TEXAS



EXPLANATION

- Ogallala
- Gulf Coast
- * Edwards (BFZ)
- * Carrizo-Wilcox
- * Trinity
- * Edwards-Trinity (Plateau)
- Seymour
- Hueco-Mesilla Bolson
- Cenozoic Pecos Alluvium

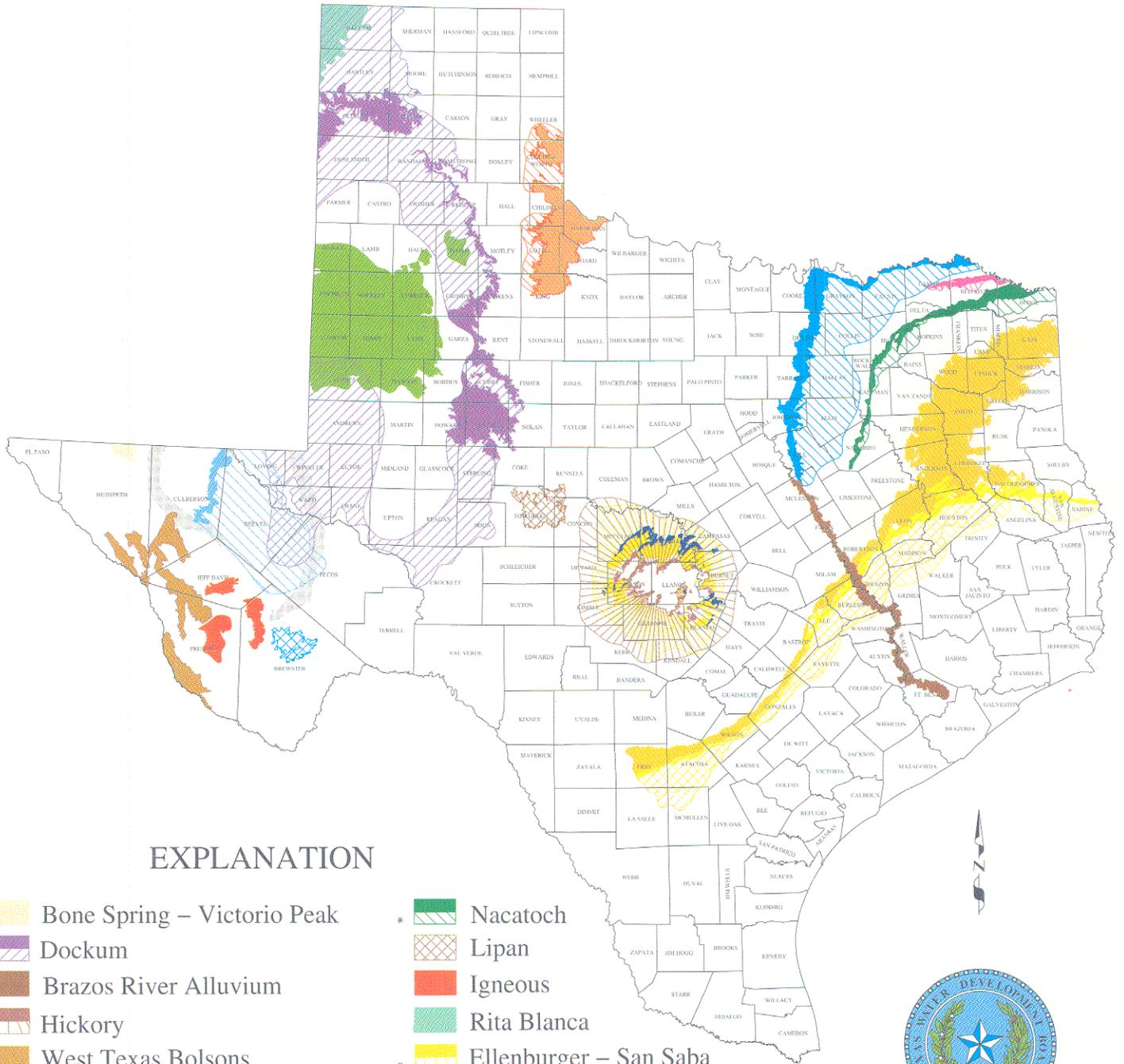
OUTCROP (That part of a water-bearing rock layer which appears at the land surface.)

* DOWNDIP (That part of a water-bearing rock layer which dips below other rock layers.)



January 1994

MINOR AQUIFERS OF TEXAS



EXPLANATION

- | | |
|---------------------------------|---------------------------|
| Bone Spring – Victorio Peak | Nacatoch |
| * Dockum | Lipan |
| Brazos River Alluvium | Igneous |
| * Hickory | Rita Blanca |
| West Texas Bolsons | * Ellenburger – San Saba |
| * Queen City | * Blossom |
| * Woodbine | Marble Falls |
| Edwards – Trinity (High Plains) | * Rustler |
| * Blaine | * Capitan Reef Complex |
| * Sparta | Marathon |

OUTCROP (That part of a water-bearing rock layer which appears at the land surface.)
 * DOWNDIP (That part of a water-bearing rock layer which dips below other rock layers.)



Table 1. Major Responsibilities of the TGPC

<i>Coordinate Groundwater Protection Activities of the Agencies Represented on the Committee</i>
<i>Develop and Update a Comprehensive Groundwater Protection Strategy for the State</i>
<i>Study and Recommend to the Legislature Groundwater Protection Programs for each Area in which Groundwater is not Regulated, and File with the Governor, Lieutenant Governor, and Speaker of the House of Representatives a Biennial Report of the TGPC's Activities and any Recommendations for Legislation for Groundwater Protection</i>
<i>Publish an Annual Monitoring and Contamination Report Describing the Current Status of Groundwater Monitoring Programs of Each Member Agency and Groundwater Contamination Cases Documented or Under Enforcement During the Calendar Year</i>
<i>Advise the Texas Commission on Environmental Quality on the Development of Plans for the Protection and Enhancement of Water Quality including Management for the Prevention of Water Pollution by Agricultural Chemicals and Agents</i>

The Water Code allows each member of the TGPC to designate a personal representative of the member's agency to represent the member on the TGPC. The current TGPC members and their designated representatives are listed in Appendix 1.

The regulatory protection of groundwater is primarily the responsibility of the TCEQ. Certain groundwater-related regulatory activities are under the jurisdiction of the Railroad Commission of Texas, the Texas Department

Table 2. Texas Groundwater Protection Committee Membership

<i>Executive Director of the Texas Commission on Environmental Quality</i>
<i>Executive Administrator of the Texas Water Development Board</i>
<i>Representative selected by the Railroad Commission of Texas</i>
<i>Commissioner of Health of the Texas Department of Health</i>
<i>Deputy Commissioner of the Department of Agriculture</i>
<i>Executive Director of the Texas State Soil and Water Conservation Board</i>
<i>Representative selected by the Texas Alliance of Groundwater Districts</i>
<i>Director of The Texas Agricultural Experiment Station</i>
<i>Director of the Bureau of Economic Geology of the University of Texas at Austin</i>
<i>Representative of the Department of Licensing and Regulation</i>

of Agriculture, the Texas Department of Health, the Texas State Soil and Water Conservation Board and the Texas Department of Licensing and Regulation. The Texas Water Development Board has monitoring authorities in regard to groundwater but does not possess the statutory authority to regulate activities that may contaminate groundwater. The Texas Alliance of Groundwater Districts, as an organization, has no regulatory or enforcement authority, but individual groundwater districts have limited authorities for action with regard to groundwater contamination. The Texas Agricultural Experiment Station and the Bureau of Economic Geology conduct research activities related to groundwater. A brief description of groundwater-related responsibilities, protection programs, and research conducted by the agencies represented on the TGPC follows.

Texas Commission on Environmental Quality

The Texas Commission on Environmental Quality (TCEQ) has the responsibility for the majority of the state's environmental and water quality regulatory programs. The TCEQ implements a variety of programs which address groundwater protection and focus on both prevention of contamination and remediation of existing problems. The major areas of jurisdiction affecting groundwater include wastewater and storm water permitting, the Edwards aquifer protection program, the petroleum storage tank (PST) program, underground injection control, surface water rights permitting, the oversight of public drinking water systems, the on-site wastewater program, solid and hazardous waste disposal and remediation programs.

As the state lead agency for water quality and environmental protection, the TCEQ administers both state and federally mandated programs. Federal programs include the Resource Conservation and Recovery Act for the management of municipal and industrial wastes; the Comprehensive Environmental Response, Compensation, and Liability Act or Superfund environmental cleanup program; the Clean Water Act for managing pollutant releases to state waters; the Safe Drinking Water Act for the protection of public drinking water supplies; and the development of pesticide management plans for groundwater under the Federal Insecticide, Fungicide, and Rodenticide Act. TCEQ has responsibilities and authorities under state law provided in the Texas Water Code and the Texas Health and Safety Code for a number of programs addressing water resource management, waste management, and environmental protection.

The TCEQ is headed by a three-member commission and organized into major functional program areas. The Office of Permitting, Registration, and Remediation is responsible for permitting facility operations which include provisions for the prevention of groundwater impacts and for remediation and corrective action to address groundwater contamination. The Office of Compliance and Enforcement is responsible for assuring that regulated entities comply with permits and agency rules including provisions related to groundwater quality protection through: a network of agency regional offices, facility inspections, enforcement proceedings, and professional licensing. The Office of Environmental Policy, Analysis and Assessment is responsible for the functions of environmental assessment, program planning, and the development of policy and regulations and providing support for the TGPC. Outreach and technical assistance are responsibilities in each of the program areas directed to specific stakeholder and regulated communities. TCEQ also has outreach programs targeting small business and local government technical assistance.

Texas Water Development Board

The Texas Water Development Board (TWDB), created in 1957, is the state agency responsible for statewide water planning, collection and maintenance of water resource information, and administration of financial assistance programs for water supply, water quality, flood control and agricultural water conservation projects. The TWDB is responsible for the development of the State Water Plan to provide for the orderly development, management and conservation of the state's water resources. TWDB provides support to regional water planning groups for the development of regional water plans that serve as the bases for the State Water Plan.

The TWDB, in support of its water planning and data collection responsibilities, conducts an active groundwater resource assessment program. The TWDB conducts studies to assess the State's aquifers, including occurrence, availability, quality and quantity of groundwater present. Major groundwater-using entities and current and projected demands on groundwater resources are also identified. The TWDB conducts statewide groundwater level measurements and groundwater quality sampling programs as a part of its assessment effort. The groundwater quality sampling program permits the TWDB to 1) monitor changes, if any, in the ambient quality of groundwater over time; and 2) establish, as accurately as possible, the baseline quality of groundwater occurring naturally in the State's aquifers.

As a significant part of the water planning process, the TWDB supports a Groundwater Availability Model (GAM) Program, an initiative to develop state-of-the-art, publicly available numerical groundwater flow models.

GAMs provide reliable information on groundwater availability in Texas to ensure adequacy of supplies or recognition of inadequacy of supplies throughout the State Water Plan's 50-year planning horizon. The TWDB plans to have all nine of the state's major aquifers modeled by the year 2003 and the minor aquifer models completed by 2004.

Railroad Commission of Texas

The Railroad Commission of Texas (RCT) regulatory authority includes oil and gas exploration and production, surface mining and mine reclamation, and pipelines. Oil and gas-related environmental regulations under the RCT include well-drilling and completion; well-plugging; surface storage, treatment, and disposal of oil and gas wastes; oil spill response; management of hazardous oil and gas wastes; disposal of non-hazardous oil and gas wastes by injection; underground injection of fluids for enhanced recovery of hydrocarbons; underground hydrocarbon storage; solution mining of brine; and site remediation of the afore-mentioned activities. The RCT offers technical guidance through its oil and gas waste minimization program. Environmental activities related to surface mining include surface coal and uranium mine operations, and mine land abandonment. Pipeline regulations are primarily safety regulations, although the routes of new pipelines are reviewed for environmental risk.

Permits to drill oil, gas, and related wells are issued only after the applicant has submitted a letter from the TCEQ that provides information on the depth of usable quality groundwater. The information is used to ensure that the well is constructed and cemented in a manner that protects groundwater. Similarly, the information is used to ensure that during plugging operations plugs are set to isolate and protect groundwater. Knowledge of the presence of shallow groundwater and the recharge areas of aquifers is vital to the regulation of surface storage and disposal of oil and gas wastes. Underground injection, hydrocarbon storage, and brine mining are primarily groundwater protection regulations federally delegated under the Safe Drinking Water Act. The RCT requires remediation of sites contaminated by oil and gas exploration, production, disposal, and pipeline operations to prevent groundwater contamination or to mitigate groundwater contamination. Remediation projects include operator-initiated clean-up and state-funded clean-ups, if no responsible party exists. Oil spills must be reported, managed and remediated in accordance with state regulations.

The Site Remediation Section of the RCT is responsible for the state-funded cleanup of abandoned oil field pollution sites (State-Funded Cleanup Program) and the oversight and monitoring of complex pollution

cleanups conducted by responsible operators (Operator Cleanup Program). In addition, the Site Remediation Section administers the Voluntary Cleanup Program for contaminated property over which the RCT has jurisdiction. The goal of these programs is to control or cleanup oil and gas waste or other materials that are causing or likely to cause the pollution of surface or subsurface water, to ensure human health and safety and to protect the environment.

A groundwater impact assessment is performed as part of surface mining permitting process. Permits contain plans to protect the groundwater resources in the area of the permit. Groundwater may be removed during the mining activities; however, if those activities adversely impact a used groundwater resource, then the impacts must be mitigated. Abandoned mines are closed to protect natural resources and the public.

Texas Department of Agriculture

The Texas Department of Agriculture (TDA) has lead authority for pesticide regulation in Texas. TDA recognizes certain pesticides as potential groundwater contaminants and has primary responsibility in preventing unreasonable risk to human health and the environment from the use of pesticides. To reduce the potential of groundwater contamination by pesticides the agency conducts a variety of activities such as product registration to ensure pesticides have met all USEPA requirements for use, pesticide label compliance and enforcement, pesticide applicator licensing, and risk assessment of potential impacts of agricultural chemicals on human health and the environment.

The use of weather-modification technology is being evaluated in the state as mandated by the Texas Legislature. Ten rain-enhancement projects are now operating in Texas, covering some 51 million acres from the Caprock in the Texas High Plains to the coastal prairies south of San Antonio and the lower Rio Grande basin. These projects are designed to be integral parts of a long-term, water-management strategy by water conservation districts and other water-management authorities to replenish fresh-water supplies in aquifers and reservoirs, as well as to help meet the water needs of agriculture, industry, and municipalities.

The Texas Legislature established the Prescribed Burning Board (PBB) and directed its administration through the Texas Department of Agriculture. The PBB sets standards for prescribed burning; coordinates training, certification, and recertification of burn managers; and sets minimum insurance requirements for prescribed burn managers. Prescribed burning is a standardized, accepted rangeland management practice. The controlled application of fire is utilized to meet a variety of

objectives including the conservation of water resources by mitigating the undesirable impact of vegetation requiring intensive water consumption.

These mandated programs are augmented by TDA's initiatives in riparian invasive species control efforts. Staff address regulatory issues; provide technical expertise on human health, environmental, endangered species as well as other non-target effects by pesticides; and facilitate coordination of invasive species control projects.

Texas Department of Health

The Texas Department of Health (TDH) has limited involvement in groundwater protection, although it does provide services that are related to groundwater safety and public health concerns. With regard to groundwater issues, the Bureau of Environmental Health (BEH) within the agency acts primarily in a non-regulatory manner and serves in an advisory or public service role. If and when public health is determined to have been impacted by groundwater contamination, the agency's response would focus on providing advice and assistance to the population affected. Since TDH's involvement in groundwater issues is primarily advisory, the agency would assist in determining the problem and providing help to the affected public. Regulatory aspects and remediation requirements would, however, be the responsibility of other state and federal agencies, as appropriate.

Although there are no direct programs that relate to groundwater protection, the BEH does have programs that indirectly provide protection to the state's water resources. Under the Product Safety Division, the Hazard Communications Branch administers and enforces Tier II reporting of hazardous substances. Under the Toxic Substances Control Division, the TSCA Program enforces rules on Polychlorinated Biphenyls (PCB's) on behalf of the federal government. This federally funded program regulates the control and inventory of PCB's and enforces the cleanup of spills that sometimes involves groundwater monitoring. The General Sanitation Division includes programs for youth camps, childcare centers and investigates public health nuisance complaints.

The Texas Department of Health, Bureau of Radiation Control (BRC) regulates radioactive materials, including uranium recovery and radioactive waste disposal. The BRC monitors groundwater for radionuclides on a routine basis at several facilities. As needed, the BRC will sample groundwater as a result of an incident, complaint, or situation that leads BRC to believe there may be groundwater contamination. The TDH, Environmental Sciences Division laboratory performs chemical and microbiological analyses for any program at the TDH which needs

water quality testing for its samples. For example, the laboratory routinely performs PCB analyses of surface and groundwater samples for the federal PCB program. The TDH, Bureau of Laboratories also accepts water samples for routine microbiological analysis from the public for a fee.

Texas State Soil and Water Conservation Board

The Texas State Soil and Water Conservation Board (TSSWCB) is the lead agency for abatement of agricultural and silvicultural nonpoint source pollution. The TSSWCB uses its resources to educate and encourage farmers and ranchers in the importance of proper use of agricultural chemicals. The TSSWCB has authority to establish water quality management plans in areas that have developed, or have the potential to develop, agricultural or silvicultural nonpoint source water quality problems. This program provides, through local soil and water conservation districts, development, supervision and monitoring of individual water quality management plans for agricultural and silvicultural lands.

The TSSWCB has no statutory authority in the area of point source pollution, including misuse or accidents involving agricultural chemicals that are defined as point source pollution. The Board cooperates with the TDA and TCEQ in instances of point source agricultural chemical pollution.

Besides their involvement in the abatement of nonpoint source pollution, the Board also helps to preserve groundwater resources with its Cost Share Program and Brush Control Program. The Cost Share Program provides funding to pay for 75 percent of the implementation costs for a Water Quality Management Plan which is developed and approved by the Board. This plan represents a commitment by the landowner to use the best management practices for their land uses available, as laid out in the plan, in order to protect their land and water resources from erosion, pesticide contamination, and over use. The Brush Control Program also protects groundwater resources by controlling invasive brush species which use large amounts of water. By controlling the brush in an area and restoring the native grasses, more water is available to recharge the aquifer below. This program has been very successful in areas, restoring seeps and springs that had been dormant for decades due to the invasion of brush species.

Texas Alliance of Groundwater Districts

The Texas Alliance of Groundwater Districts (TAGD), formerly the Texas Groundwater Conservation Districts Alliance, was formed on May 12, 1988. Its membership is restricted to groundwater conservation districts in Texas who have the powers and duties to manage groundwater as defined in Chapter 36 of the Texas Water Code. TAGD is organized exclusively for charitable, educational, or scientific purposes within the meaning of Section 501(c)(3) of the Internal Revenue Code.

The TAGD was formed to further the purposes of groundwater conservation and protection activities. TAGD provides a means of communication and exchange of information between individual groundwater conservation districts on issues ranging from the day-to-day operation of local groundwater management to statewide groundwater resource policy issues. Members of TAGD are part of a network in which valuable technical and operational experience is available to members and the interested public. TAGD maintains contact with members of the private sector and various elected, local, state, and federal officials, providing them with timely information on activities and issues relevant to groundwater management. Members of TAGD also serve on various local, state, and federal agency committees and subcommittees, providing input and information on behalf of member districts. To date, there are 63 district members of the TAGD.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station (TAES) is the official agricultural research agency in Texas. TAES has no regulatory authority. Headquartered at Texas A&M University, TAES promotes food and fiber production while emphasizing water conservation and the protection of natural resources. TAES operates a system of 14 research centers which are located in the major land and natural resource regions of Texas. The Texas Water Resources Institute is an administrative unit of TAES that guides internal water-related research. The main function of TAES is research into development of management strategies and basic understanding of contaminant removal from water resources and movement of contaminants through aquifers.

Broad goals of the TAES groundwater research program are to protect, preserve, and efficiently use water resources, and to develop sustainable agricultural production systems. Groundwater programs of TAES stress the development of management strategies, technologies, and educational programs to support sustainable agriculture. TAES groundwater quality

research focuses on reductions in chemical use; the control, fate, and transport of agricultural chemicals; and the remediation of contaminated groundwaters.

Major efforts are underway to develop strategies to manage brush species on rangelands to increase water yields and protect water quality; to manage solid and liquid wastes from livestock production and processing to prevent water contamination; to develop crop production technologies that produce high yields while minimizing the loss of pesticides, chemicals and nutrients into ground and surface waters; and, to manage contaminants produced during industrial and urban activities.

TAES also trains future professionals through undergraduate and graduate education and research programs at Texas A&M University and other System institutions. Many TAES researchers at Texas A&M University in College Station also hold teaching appointments, thus providing the latest research results to students.

TAES research efforts are complemented by the programs of the Texas Cooperative Extension, also a component of the Texas A&M University System. Texas Cooperative Extension conducts educational programs on management strategies and best management practices to protect groundwater resources. Extension specialists produce easy-to-read fact sheets and other publications for specific clientele, including agricultural producers. Other Extension activities include field demonstrations and educational programs for youth and adults. The Texas Cooperative Extension has no regulatory authority.

Bureau of Economic Geology

The Bureau of Economic Geology (BEG), established in 1909, is a research entity of The University of Texas at Austin and functions as the State Geological Survey. The BEG conducts basic and applied research projects related to water resources and contaminant transport in support of other State and Federal agencies. It is not a regulatory agency and has no groundwater protection regulatory programs but supports the agencies that fulfill these functions.

The BEG serves as a valuable resource for geologic maps and reports that provide the framework for many environmental studies. The State geological mapping program focuses on developing maps of different geologic units and works with other State agencies to identify priority areas related to environmental issues. The core repository at the BEG contains an extensive collection of cores from many of the geologic units in the state. One of the strengths of environmental studies conducted by the BEG is the integration of geology and hydrology.

Groundwater resources are the focus of several studies conducted by the BEG. Groundwater models have been developed by BEG scientists of many of the major aquifers in the state, including the northern Ogallala, Trinity, Carrizo-Wilcox, Edwards (Barton Springs segment), and Gulf Coast aquifers. Some of these are currently being developed as part of the Groundwater Availability Modeling program directed by the Texas Water Development Board.

The BEG also has unique capabilities in unsaturated zone hydrology include physical, chemical, and isotopic analysis and modeling. The unsaturated zone is extremely important because many contaminants originate near the land surface and have to be transported through the unsaturated zone to reach the water table. In addition, groundwater recharge generally occurs through the unsaturated zone and is a critical issue for assessing groundwater availability in the state. Examples of previous studies in unsaturated zone hydrology include characterization of water fluxes related to proposed low-level radioactive waste disposal sites, quantification of contaminant transport related to the U.S. Department of Energy's Pantex Plant, and estimation of recharge for groundwater modeling studies.

The BEG has conducted many studies evaluating contaminant transport in the state. Examples of the types of studies include delineation of salinity contamination related to oil and gas production activities for the Railroad Commission of Texas, assessment of transport processes at the DOE Pantex Plant, and evaluation of benzene plumes related to underground fuel tanks. Results of the benzene plume study were extremely valuable for TCEQ in developing remediation protocols with respect to leaking petroleum storage tanks.

One of the missions of the BEG is public outreach. In its role as the State Geological Survey, the BEG responds to questions and requests for information from other institutions and the public. The BEG participates in many public education programs, including efforts to engage kindergarten through 12th grade students and teachers in scientific discovery. The BEG has been actively involved in organizing and promoting Earth Science Week, celebrated both nationally and internationally, which highlights the ways the earth sciences affect our daily lives and features an annual career fair.

Texas Department of Licensing and Regulation

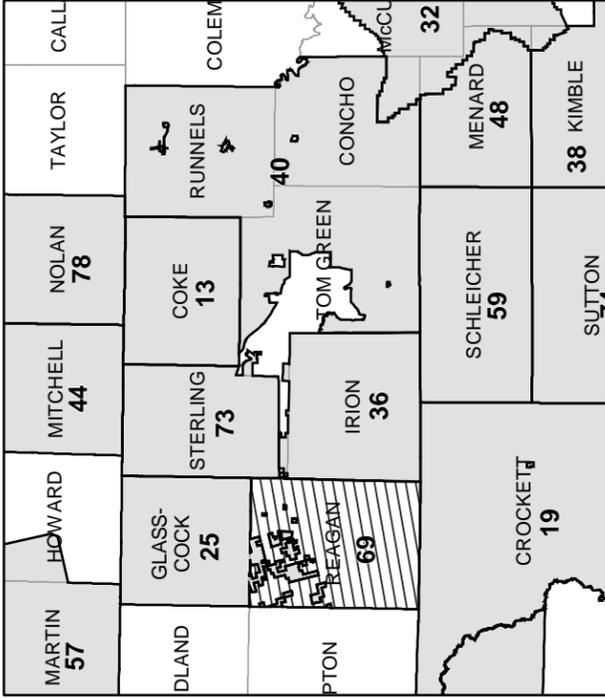
The TDLR's Water Well Driller/Pump Installer Program (WWD/PI Program), maintains the Water Well Drillers Advisory Council; investigates all alleged violations of Chapters 32 and 33 of the Texas Water Code and Title 16 TAC Chapter 76 (Water Well Drillers and Pump Installers Rules); investigates consumer complaints filed against regulated well drillers/pump installers; and randomly inspects wells to insure compliance with well construction standards. Investigations also include compliance with rules requiring isolation of zones containing undesirable or poor quality water to prevent commingling with and degradation of fresh water zones. Investigations that involve groundwater contamination are referred to the appropriate state agency with jurisdiction for the activity believed to be the cause of the contamination. In an area where groundwater contamination has been confirmed, the WWD/PI Program contacts the licensed drillers by letter with specific instructions on how to complete wells in the area to avoid further contamination.

The WWD/PI Program administers the Abandoned Well Notification and Enforcement Program. Abandoned or deteriorated wells are reported to the TDLR by drillers, pump installers, and neighbors who discover them. The WWD/PI Program contacts the landowners by letter to notify them of the requirement to plug or bring the wells into compliance not later than 180 days from the time of the notice. Only licensed water well drillers, licensed pump installers, or the landowner whose property contains an abandoned or deteriorated well may plug or bring the well into compliance. All must submit a State of Texas Plugging Report to the TDLR no later than 30 days after the well is plugged or capped. Information is available, from the TDLR and the TGPC, to landowners wishing to plug their own wells.

At the end of December 2001, there were 1831 licensed professionals including drillers, pump installers, and apprentices regulated by the WWD/PI Program. During Fiscal Year 2001, there were 381 investigations and 196 inspections conducted by the Water Well Driller/Pump Installer Program with all documented violations either remediated or in the enforcement process.

Legend

1. Anderson County UWCD
2. Barton Springs/Edwards Aquifer CD
3. Bee GCD
4. Bexar Metropolitan Water District
5. Blanco-Pedernales GCD
6. Bluebonnet GCD
7. Brazos Valley GCD
8. Brewster County GCD
9. Clear Fork GCD
10. Clearwater UWCD
11. Coastal Bend GCD
12. Coastal Plains GCD
13. Coke County UWCD
14. Collingsworth County UWCD
15. Cow Creek GCD
16. Culberson County GCD
17. Dallam County UWCD No. 1
18. Edwards Aquifer Authority
19. Emerald UWCD
20. Evergreen UWCD
21. Fayette County GCD
22. Fort Bend Subsidence District
23. Fox Crossing Water District
24. Garza County Underground And Fresh Water CD
25. Glasscock GCD
26. Goliad County GCD
27. Gonzales County UWCD
28. Guadalupe County GCD
29. Harris-Galveston Coastal Subsidence District
30. Headwaters GCD
31. Hemphill County UWCD
32. Hickory UWCD No. 1
33. High Plains UWCD No.1
34. Hill Country UWCD
35. Hudspeth County UWCD No. 1
36. Irion County WCD
37. Jeff Davis County UWCD
38. Kimble County GCD
39. Kinney County GCD
40. Lipan-Kickapoo WCD
41. Live Oak UWCD
42. Llano Estacado UWCD
43. Lone Star GCD
44. Lone Wolf GCD
45. Lost Pines GCD
46. McMullen GCD
47. Medina County GCD
48. Menard County UWCD
49. Mesa UWCD
50. Mid-East Texas GCD
51. Middle Pecos GCD
52. Middle Trinity GCD
53. Neches&Trinity Valleys GCD
54. North Plains GCD
55. Panhandle GCD
56. Pecan Valley GCD
57. Permian Basin UWCD
58. Pineywoods GCD
59. Plateau UWC And Supply District
60. Plum Creek CD
61. Post Oak Savannah GCD
62. Presidio County UWCD
63. Real-Edwards C and R District
64. Red Sands GCD
65. Refugio GCD
66. Rolling Plains GCD
67. Salt Fork UWCD
68. Sandy Land UWCD
69. Santa Rita UWCD
70. Saratoga UWCD
71. South Plains UWCD
72. Springhills Water Management District
73. Sterling County UWCD
74. Sutton County UWCD
75. Texana GCD
76. Trinity-Glen Rose GCD
77. Uvalde County UWCD
78. Wes-Tex GCD
79. Wintergarden GCD



* Santa Rita UWCD

* Edwards Aquifer Authority

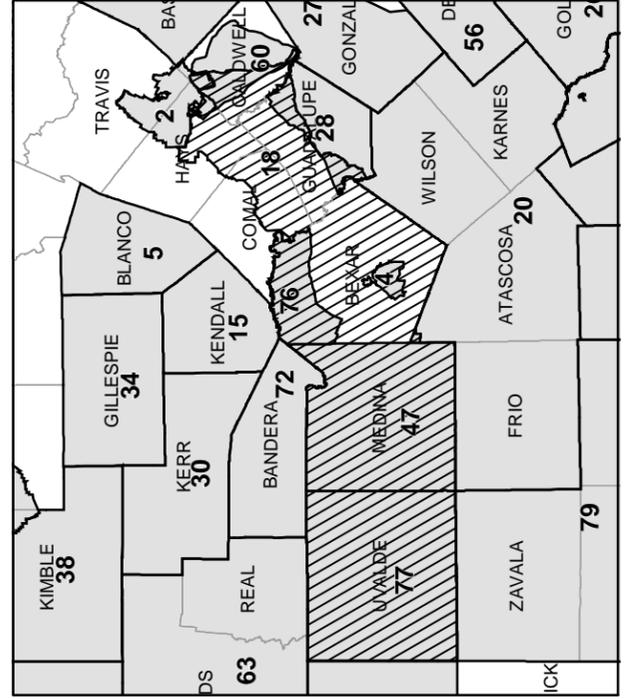
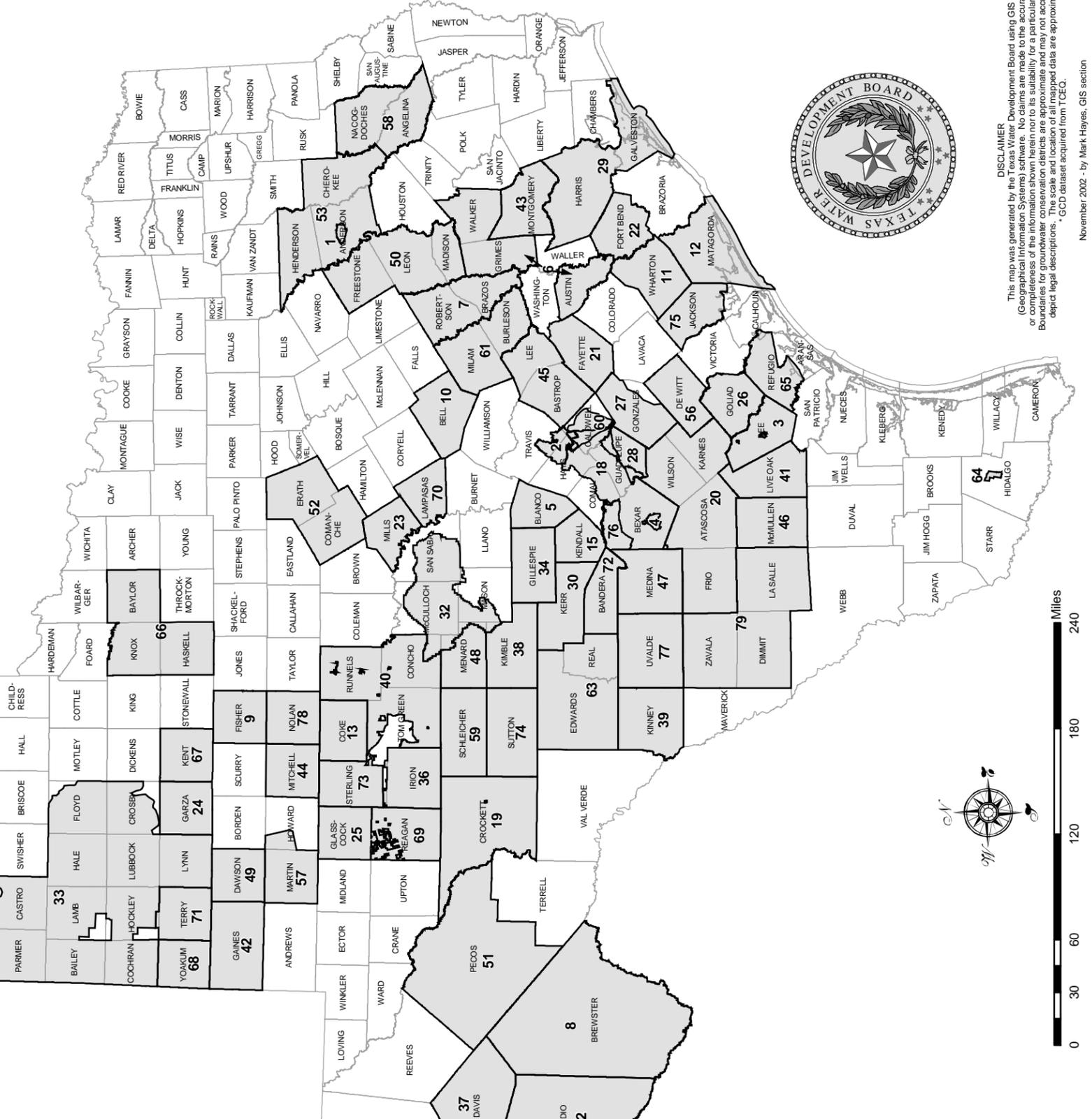


Figure 3. Groundwater Conservation Districts



DISCLAIMER
 This map was generated by the Texas Water Development Board using GIS (Geographical Information Systems) software. No claims are made to the accuracy or completeness of the information shown herein nor to its suitability for a particular use. Boundaries for groundwater conservation districts are approximate and may not accurately depict legal descriptions. The scale and location of all mapped data are approximate.
 * GCD dataset acquired from TCEQ.

Federal Involvement and Coordination

Since 1985, EPA grants administered under Section 106 of the Clean Water Act have promoted and funded coordination of groundwater protection activities of federal and federally-delegated regulatory programs, and the development of a groundwater protection strategy.

The TGPC actively coordinates with federal agencies on groundwater protection issues that affect the state. The TGPC has taken leadership initiative with federal agencies on the development of a state groundwater protection strategy and the development of pesticide management plans for the prevention of groundwater contamination. In addition, the TGPC has regularly provided national level input to federal agencies on groundwater protection and program issues through the Ground Water Protection Council (an association of state groundwater and underground injection control program directors) and the State FIFRA Issues Research Evaluation Group (a group formed by state agricultural regulatory officials and EPA to discuss and evaluate pesticide matters affecting states), and other state and federal stakeholder and regulatory guidance groups.

The TGPC also works closely with the U.S. Geological Survey (USGS), the federal agency with responsibilities that include national level geologic mapping and hydrologic studies. Staff of the USGS have participated in various TGPC-sponsored projects, providing groundwater expertise and opportunities for state input in federally sponsored research.

TGPC ACTIVITIES 2001–2002

Actions on Recommendations to the 77th Legislature

The 77th Legislature, directly or indirectly, addressed four of the nine recommendations forwarded by the TGPC in December, 2000 (TGPC, 2000b). Senate Bill 2 made significant changes in the laws governing groundwater management including streamlining processes for district creation and priority groundwater management area designations. Resources were provided to agencies for the continued development of groundwater availability models and to support effective brush control projects.

Five TGPC recommendations were not addressed: funding for pesticide-specific state management plan development and implementation; providing an abandoned water well-plugging fund; providing resources to develop and carry out education programs on groundwater conservation, wastewater reclamation and closure of abandoned water wells; providing for the acquisition of groundwater quality protection zones; and, providing resources to enhance the state's groundwater data collection and research efforts.

Meetings and Presentations

In accordance with Section 26.404 of the Texas Water Code, the TGPC is subject to Chapters 2001, 551, and 552 of the Government Code relating to administrative procedures. In addition to the public notification of meetings in the Texas Register, a notice of a committee meeting, including the proposed meeting agenda, are provided to all individuals on the TGPC's mailing list. Meeting notices are also posted on the TGPC's Internet home page.

As required by Section 26.404, the TGPC met quarterly during the 2001–2002 biennium for a total of ten meetings including eight regular meetings and two work session meetings. Regularly scheduled items on the TGPC's agenda include subcommittee reports, presentations and round table discussions, business, information exchange, announcements, and public comment. The two work session meetings were devoted to development of the Texas Groundwater Protection Strategy.

During the biennium, various agencies and groups gave presentations to the TGPC on new or improved groundwater-related activities and initiatives. The presentations serve to broaden interagency awareness and

coordination. Presentations to the TGPC during the 2001–2002 biennium included the following:

- # An overview on changes in groundwater management policies including priority groundwater management area issues provided by the TWDB and the TCEQ;
- # Member agency roundtable discussion of groundwater legislation passed by the 77th Legislature;
- # New rules and educational programs for the state's On-site Wastewater Program provided by TCEQ and Texas Cooperative Extension (TCE);
- # TWDB presentation on the State's 2002 Water Plan;
- # The U.S. Geological Survey presentation on its Progress Report for the Southern High Plains Aquifer National Water Quality Assessment (NAWQA) Program;
- # RCT presentation on their new Voluntary Cleanup Program; and,
- # Texas Water Quality Monitoring Council and their 2002 Water Monitoring Congress.

Subcommittees and Work Groups

Subcommittees and work groups are created at the call of the chairman, and with the approval of the TGPC. The subcommittees address specific groundwater-related issues and program development. The subcommittees provide reports of their activities to the TGPC at its regularly scheduled meetings. At its meetings, the TGPC considers the findings and recommendations of the subcommittees, and after holding discussion, takes action as it finds appropriate. The public is encouraged to fully participate on and serve in the subcommittee process. The subcommittees and task forces listed in Table 3 were used by the TGPC during the 2001 – 2002 biennium.

Table 3. Active Subcommittees, 2001-2002 Biennium

<p><i>Agricultural Chemicals Subcommittee, consisting of:</i> <i>State Management Plan Task Force</i> <i>Education Task Force</i> <i>Site Selection Task Force</i> <i>Data Evaluation and Interpretation Task Force</i> <i>Best Management Practices Task Force</i></p>
<p><i>Data Management Subcommittee</i></p>
<p><i>Groundwater Nonpoint Source Subcommittee</i></p>
<p><i>Legislative Report Subcommittee</i></p>
<p><i>Abandoned Well Closure Task Force</i></p>
<p><i>Groundwater Protection Strategy Work Group</i></p>
<p><i>Groundwater Research Subcommittee</i></p>

Agricultural Chemicals Subcommittee

The Agricultural Chemicals Subcommittee was created to coordinate the development of the generic state management plan (SMP) for pesticides in groundwater and the subsequent pesticide-specific state management plans. The subcommittee meets quarterly and is composed of representatives from interested agencies serving on the full TGPC, the Texas Agricultural Extension Service, and the Structural Pest Control Board. A technical advisory group of interested parties, including federal agencies, other state agencies, producer groups, environmental groups, and the agricultural chemical industry has served the subcommittee to provide expertise and perspective during the development of the generic SMP.

The Agricultural Chemicals Subcommittee has designated five work groups: the State Management Plan Task Force, the Educational Task Force, the Site Selection Task Force, the Data Evaluation and Interpretation Task Force, and the Best Management Practices Task Force.

- # The State Management Plan Task Force is responsible for writing and revising generic and pesticide-specific state management plans.
- # The Education Task Force is responsible for developing SMP-related educational information and materials and coordinating educational outreach through public presentations, displays, applicator certification curriculum development, and brochures.

- # The Site Selection Task Force is responsible for identifying and delineating vulnerable geographic areas for conducting pesticide-specific groundwater monitoring. The Site Selection Task Force also plans groundwater monitoring strategies, and, if contamination is discovered, determine sampling strategies for determining the extent of contamination.
- # The Data Evaluation and Interpretation Task Force, if monitoring reveals contamination, evaluates the quality of the data and interpret the available information to determine the probable source and cause of the contamination. The task force also coordinates the state's response, under the SMP, to groundwater contamination.
- # The Best Management Practices Task Force is responsible for developing the preventive component of the generic SMP and identifying pesticide-specific and area-specific best management practices that can be used to prevent or curtail pesticide contamination of groundwater.

The Agricultural Chemicals Subcommittee developed the state's generic SMP, which has received EPA concurrence. Working through its Task Forces and federal guidelines for the generic PMP, the Subcommittee is further developing plan components for future pesticide-specific PMPs. Work efforts have been underway in three areas: (1) ambient and vulnerable area groundwater monitoring for priority pesticides, (2) investigative efforts to develop responses to reported pesticide detections, and (3) the identification of Best Management Practices (BMPs) for specific problem areas.

Data Management Subcommittee

The Data Management Subcommittee is charged with improving the sharing of data between levels of government, the academic community, and the private sector. The subcommittee provides recommendations for the continuing improvement of groundwater data collection and assessment for the state's groundwater protection programs.

The subcommittee's initial goals were to develop ways of linking and sharing groundwater data and to develop standards to facilitate the sharing of information. Representatives of 10 state, federal, and local agencies, and the private sector spent over two years developing the *Texas Ground-Water Data Dictionary* (TGPC, 1996b). The data dictionary provides groundwater professionals in Texas with specific guidelines that describe a standardized framework for collecting and storing information on groundwater in the state. Over the next two years, the Data

Management Subcommittee will be reviewing the data dictionary, and making recommendations for revisions to keep up with technological changes that have taken place since its publication. Areas under review include the minimum data elements needed to accommodate geospatial data acquired by Global Positioning Systems (GPS) and used in Geographic Information Systems (GIS).

The Data Management Subcommittee has been charged with designing and facilitating a formal committee process for the coordination and integration of groundwater data collection. In working to address this charge, the Data Management Subcommittee prepares the annual Joint Groundwater Monitoring and Contamination Report. In addition, the subcommittee coordinates the assessment of the groundwater quality of the state's aquifers as an integral part of the state's groundwater protection strategy. The collection of groundwater data for the biennial Water Quality Inventory report, that is prepared and sent to EPA to fulfill requirements of Section 305(b) of the Clean Water Act, is also a responsibility of the Data Management Subcommittee.

Groundwater Nonpoint Source Subcommittee

The purpose of the Groundwater Nonpoint Source Subcommittee, chaired by the TSSWCB, is to facilitate and formalize the groundwater nonpoint source (NPS) program in Texas and to provide support and guidance for the groundwater NPS management policy of the state. The subcommittee provided input for the NPS Annual Report to the EPA; updated the state NPS assessment of groundwater conditions and NPS management strategy for groundwater resources; facilitated the review and submission of NPS project proposals for the annual EPA Clean Water Act, Section 319 (h) funding cycle; and provided input related to groundwater to the TSSWCB and the TCEQ for their management plans.

Many similarities existed between the activities and membership of the Groundwater Nonpoint Source Subcommittee and the Agricultural Chemicals Subcommittee. The two subcommittees responsibilities actually overlapped in several areas, and this prompted the chairman of the Groundwater Nonpoint Source Subcommittee to request that the TGPC suspend the subcommittee's activities, and to fold them into the activities of the Agricultural Chemicals Subcommittee in 2001. The TGPC did act to suspend the Groundwater Nonpoint Source Subcommittee, but with the provision that the subcommittee would be reactivated if unique nonpoint source concerns were recognized and needed attention.

Legislative Report Subcommittee

The Legislative Report Subcommittee is biennially charged with facilitating the TGPC's efforts in publishing the legislative report required by Section 26.405 of the Texas Water Code. The subcommittee is specifically charged to review the draft report's contents, revise the scope of the report as needed, and develop, for full-TGPC approval, groundwater protection recommendations for legislative consideration.

Abandoned Well Closure Task Force

The Abandoned Well Closure Task Force was created to coordinate an educational outreach initiative. The purpose of the task force is to develop the necessary procedures, educational, and technical information required to promote the landowner-initiated closure or plugging of abandoned water wells; develop a curriculum for well-closure presentations or workshops; and design well-closure seminars and demonstrations to be conducted throughout the state. The task force is composed of several TGPC member agencies and the Texas Agricultural Extension Service, U.S. Department of Agriculture's Natural Resource Conservation Service, Texas Farm Bureau, Water Well Drillers Advisory Council, and Texas Rural Water Association.

Groundwater Protection Strategy Work Group

The Groundwater Protection Strategy Work Group was created in January 2001 as an ad hoc group of TGPC member agency representatives. The purpose of the work group is to facilitate and support the Committee's discussions and development of the State's Groundwater Protection Strategy. The work group serves to identify concepts, goals and recommended actions relevant to the TGPC's legislatively-mandated mission and goals. The work group facilitates discussions at regular and special meetings of the TGPC.

Groundwater Research Subcommittee

The purpose of the Groundwater Research Subcommittee is to act as a formal mechanism for identifying interagency research needs and providing a coordinated approach for discussion with potential funding sources. The subcommittee identifies projects where shared resources could support research to solve problems that are common to many TGPC committee members, including identifying opportunities for cooperatively applying to federal agencies for pass-through monies. The subcommittee facilitates cooperation by identifying ways to join forces with state or

federal agencies, local governmental entities, and universities on research efforts. The subcommittee identifies research and program needs and helps focus the efforts of the researchers on meeting these needs. In areas where overlapping research initiatives are discovered, the subcommittee will facilitate communication among the various research organizations.

Rules Review

The TGPC rules (Appendix 2) are contained in Title 31, Texas Administrative Code, Chapter 601, and address the preparation of the joint groundwater monitoring and contamination report and the maintenance of public files. In accordance with Government Code Section 2001.039, state agencies are required to develop and implement a rules review plan for the periodic review and readoption of an agency's rules.

The TGPC has completed the review and readoption of all regulations promulgated by the Committee. The TGPC began a review of its rules according to its August 24, 2000 Rules Review Plan in January 2002. The TGPC determined that the reasons for the rules continue to exist because Section 26.406 of the Texas Water Code specifically provides that the TGPC shall adopt rules defining the conditions that constitute groundwater contamination for purposes of inclusion of cases in the public files and the joint report required by that section. At its February 21, 2002 meeting, the Committee approved the publication of the quadrennial rules review for the TGPC rules and approved publication of proposed amendments to Chapter 601, Title 31, Texas Administrative Code. These proposed rule revisions recognized the addition of the Water Well Drillers and Water Well Pump Installers Program of the Texas Department of Licensing and Regulation as a new member agency of the TGPC and changed the name of the Texas Natural Resource Conservation Commission to the Texas Commission on Environmental Quality. No public comments were received on the proposal or the quadrennial review during the 30-day comment period. The TGPC adopted the proposed rules and the rules review at its May 16, 2002 meeting.

TCEQ staff filed an updated Rules Review Plan for the TGPC with the Texas Register in October 2002. The plan commits the TGPC to review its rules on an ongoing basis within four years of its previous review. The next scheduled review would begin in January 2006. The TGPC may review its rules as part of its routine rulemaking before its scheduled review date, if it is necessary to propose amendments to Chapter 601.

Public Records

The TCEQ administers the activities of the TGPC in accordance with Section 26.403 of the Texas Water Code. The TCEQ's Technical Analysis Division maintains a mailing list of TGPC members, designated and alternate members, subcommittee members, agency staff, and interested parties for meeting notification and correspondence. The TCEQ provides meeting information through the *Texas Register* for public notification, maintains audio tapes of TGPC meetings, prepares meeting records for TGPC meetings, and maintains meeting and correspondence files for the TGPC and its subcommittees. The TGPC's publications are available through the TCEQ's Agency Communications Division. Information is also made available to the public through the TCEQ/TGPC Internet home page. Information regarding groundwater monitoring programs and groundwater contamination incidents are maintained individually by the participating agencies and districts.

EDUCATIONAL OUTREACH

State Management Plan for Pesticides in Groundwater

The state's generic PMP, the *Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater*, received concurrence from EPA, and was published in late 2000. A set of slides and an outlined presentation have been prepared to familiarize special interest groups and the general public with the development and implementation of the generic state management plan. In addition, presentations have been prepared and given at various educational events describing the results of the Subcommittee's pesticide groundwater monitoring. The Best Management Practices (BMP) Task Force has prepared a plan and outline for BMP education for atrazine, to be used as a basis for future BMP educational efforts.

Abandoned Well Closure Activities

Recognizing the dangers to human health and groundwater quality that abandoned water wells pose, the TGPC established and charged the Abandoned Well Closure Task Force with developing educational materials to promote the low-cost, landowner-initiated closure (capping or plugging) of abandoned water wells. State law requires landowners, who possess an abandoned or deteriorated well, to have the well plugged or capped under TDLR standards. The landowner is liable for any water contamination or injury due to such wells.

The task force initiated efforts in 1997 to develop a technical guidance document to assist landowners in plugging abandoned water wells. The technical guidance document, entitled *Landowner's Guide to Plugging Abandoned Water Wells*, was published and distributed to member agencies in April 1999. The guidance document is also available on the TGPC home page. The task force, in cooperation with the Texas Cooperative Extension (TCE) and TCEQ and with EPA funding, designed and produced a video cassette in 2000 highlighting landowner closure of abandoned water wells. This instructional video cassette has been included in the TCE educational series, *Tex-A-Syst*. The videotape has been distributed to member agencies and TCE field personnel. Copies are also available from the Water Well Drillers and Pump Installers Program of the TDLR. Both audio and video public service announcements were also developed for use with the guidance document and video.

Currently, the task force is implementing an educational outreach plan. During 2001 and 2002, the task force has worked with Texas Cooperative Extension to produce an educational curriculum to accompany and supplement the videotape. This curriculum is used by county extension agents in programs throughout the state to promote landowner plugging of abandoned water wells. Additionally, a quad-fold brochure has been produced to accompany the video and steer interested landowners to the *Landowner's Guide to Plugging Abandoned Water Wells*. The brochure is made available to the public at county fairs, farm implement shows, and other similar events.

Multiple demonstrations of the proper methods to close abandoned water wells have been conducted in the Texas panhandle and in the central part of the state. Most of these demonstrations have been arranged by local groundwater conservation districts, and carried out by Texas Cooperative Extension staff and licensed water well drillers. The demonstrations are designed to actively illustrate the methods that a landowner may use to plug an abandoned water well, as detailed in *Landowner's Guide to Plugging Abandoned Water Wells*.

TGPC Internet Home Page

The TGPC's home page, created in 1998, is maintained on the TCEQ's Internet server at: www.tgpc.state.tx.us. The TGPC's home page provides links to the member agencies' home pages and recent TGPC publications. The site also provides general information about the TGPC, the subcommittees, records of TGPC meetings, the TGPC's Groundwater Classification System, TGPC rules, meeting announcements and locations, and opportunities for the public to provide comments or seek inclusion on the TGPC's mailing list.

Quarterly Regulatory Update

The TGPC member agencies use the quarterly meetings to share and discuss current and ongoing rule development relating to the protection of groundwater quality. Agencies which are proposing new rules or are amending existing rules generally provide a description of the rule, its purpose and a rule development time line. This allows the other agencies the opportunity to ask specific questions about the rule under development and about their opportunities to provide comments on the rule. Discussions are held in an open forum and the public is provided the opportunity to participate.

ANNUAL JOINT GROUNDWATER MONITORING AND CONTAMINATION REPORTS

Section 26.406 of the Texas Water Code requires the TGPC to publish an annual groundwater monitoring and contamination report. The annual report is required to:

- # describe the current status of groundwater monitoring activities conducted by or required by each agency at regulated facilities or associated with regulated activities;
- # contain a description of each case of groundwater contamination documented during the previous calendar year;
- # contain a description of each case of contamination documented during previous periods for which enforcement action was incomplete at the time of issuance of the preceding report; and
- # indicate the status of enforcement action for each case of contamination which is listed.

The TGPC produced and published two monitoring and contamination reports during the previous two years: *Joint Groundwater Monitoring and Contamination Report-2000* (TGPC, 2001b) and *Joint Groundwater Monitoring and Contamination Report-2001* (TGPC, 2002). The reports describe the status of groundwater monitoring programs and groundwater contamination cases documented or under enforcement by the participating agencies for the calendar year. Groundwater protection program descriptions for each contributing agency or organization are included. The reports also contain individual groundwater contamination case descriptions, listed by county, for each contributing agency with regulatory groundwater protection authority. The individual case descriptions provide the enforcement status for each case.

Groundwater Monitoring

The groundwater protection programs of the participating agencies generally fall within one of three categories:

- # regulatory agencies requiring or conducting groundwater monitoring to assure compliance with guidelines and regulations for the protection of groundwater from discharges of contaminants;

- # agencies or entities conducting groundwater monitoring to assess ambient or existing groundwater quality conditions and to track changes in water quality over time; and
- # agencies or entities conducting research activities related to groundwater resources and groundwater conservation.

Each regulatory agency that requires or conducts groundwater monitoring to assure compliance with guidelines and regulations to protect groundwater from discharges of contaminants has its own monitoring program requirements and procedures. The criteria used to assess the need for groundwater monitoring vary among the regulatory entities. The latest report for 2001 describes 14 regulatory monitoring programs in two state agencies monitoring changes in groundwater quality for permit and operational requirements at approximately 14,000 facilities statewide. Data indicate that an estimated 48,000 monitor and water wells are being used for groundwater monitoring purposes at these facilities. The majority (greater than 98 percent) of the facilities being monitored are under the jurisdiction of the TCEQ, with the remainder under the jurisdiction of the RCT.

Agencies or entities including the TWDB, groundwater conservation districts, and the U.S. Geological Survey (USGS) conduct groundwater monitoring to assess ambient or existing groundwater quality conditions and to track changes in water quality over time. Some monitoring programs are developed for water quality assessment studies that target specific geographic areas, specific contaminants or constituents, or specific activities. Contamination cases discovered by these agencies or entities through groundwater studies or groundwater sampling programs are referred to the regulatory agency with appropriate jurisdiction. TWDB monitoring programs address ambient groundwater quality and assess the occurrence of particular constituents. The TWDB monitored 891 sites in 2001.

Supplementing TWDB's effort were 127 additional chemical analyses obtained from cooperating entities that included the USGS, six groundwater conservation districts involved in cooperative programs, and university research programs. In addition, approximately 900 water wells are routinely monitored for ambient groundwater quality and changes over time by 16 additional groundwater conservation districts that are not a part of the cooperative monitoring effort with TWDB.

Groundwater Contamination

Groundwater contamination, as defined by the TGPC (TGPC Rules, 31 TAC Chapter 601, Appendix 2) for inclusion in the annual report, is the detrimental alteration of the naturally occurring physical, thermal, chemical, or biological quality of groundwater reasonably suspected of having been caused by the activities of entities under the jurisdiction of the state agencies. The TGPC recognizes that groundwater contamination may result from many sources, including:

- # agricultural activities;
- # commercial and business endeavors;
- # current and past oil and gas production and related practices;
- # domestic activities;
- # industrial and manufacturing processes; and
- # natural sources that may be influenced by, or may result from, human activities.

The contamination cases identified in the annual report are primarily those where contaminants have been discharged to the surface, to the shallow subsurface, or directly to groundwater from activities such as the storage, processing, transport, or disposal of products or waste materials.

There were 7,435 documented groundwater contamination cases addressed in the annual report for 2001 and 7,567 in 2000. Approximately 96.8 percent of the documented cases were under the jurisdiction of the TCEQ . The remainder of the cases were under the jurisdiction of the RCT, with approximately 2.9 percent, and the groundwater conservation districts that make up the TAGD, with less than 1 percent.

Table 4 lists the documented groundwater contamination cases reported by each agency with enforcement jurisdiction. The total number of cases documented during 2000 and 2001 by each agency and program are listed. The percentage of the total number of documented cases attributable to each agency and program are also given for 2000 and 2001. The net change and percentage change from 2000 to 2001 for each agency and program are also shown.

As Table 4 illustrates, the reports for 2000 and 2001 have continued to document the large number of groundwater contamination impacts from petroleum storage tanks. In 2001, there were 66,441 facilities containing registered storage tanks. Approximately 95 percent of the regulated storage tanks contain petroleum products, with the remainder containing

regulated hazardous substances. As reported by the TCEQ, the number of documented groundwater contamination cases resulting from petroleum storage tank system failures declined from 5,894 in 2000 to 5,540 in 2001. This is down from a high of 6,504 cases in 1999 when reimbursement deadlines in the Petroleum Storage Tank program prompted a flurry of remediation activity in 1998 and 1999. These cases represent 77.9 percent of the total number of documented contamination cases in 2000 and 74.5 percent of the total cases in 2001. While the number of documented contamination cases from storage tanks is very high, it can be directly linked to the large number of regulated facilities and the monitoring requirements in effect for these systems.

Not reflected in the table of the most recent changes are the changes from the 1999 report. There was a dramatic increase in the number of cases reported by the Railroad Commission of Texas. The case count rose 58.3 percent between 1999 and 2000. Most of these cases fell under the jurisdiction of the Oilfield Cleanup Program. Other agency programs with increased case counts included the Voluntary Cleanup Program and the Voluntary Cleanup/Innocent Owner Program at TCEQ, showing 19.1 percent and 68.2 percent increases, respectively, between 1999 and 2001.

The most common contaminants reported in 2001 included gasoline, diesel fuel, and other petroleum products due to the large number of petroleum storage tank related cases. Less common contaminants reported included gasoline constituents, organic compounds (such as phenol, trichloroethylene, carbon tetrachloride, dichloroethylene, and naphthalene), pesticides (such as alachlor, atrazine, bromacil, dicamba, and prometon), creosote constituents, solvents, heavy metals, and sodium chloride.

Table 4. Groundwater Contamination Cases by Jurisdictional Agency, 2000-2001

Agency/Program	Total No. of Cases		Net Change	Percentage Change (total cases)	Percentage of Total	
	2000	2001	2000-2001	2000-2001	2000	2001
Texas Natural Resource Conservation Commission/Texas Commission on Environmental Quality						
Remediation Division - Corrective Action Section	540	550	10	1.9	7.1	7.4
Remediation Division - Petroleum Storage Tank Section	5894	5540	-354	-6	77.9	74.5
Remediation Division - Superfund Cleanup Section	54	60	6	11.1	0.7	0.8
Remediation Division - Superfund Site Discovery and Assessment Team	16	16	0	0	0.2	0.2
Remediation Division - Voluntary Cleanup / Innocent Owner Program	142	217	75	52.8	1.9	2.9
Remediation Division - Voluntary Cleanup Program	523	609	86	16.4	6.9	8.2
Remediation Division - Voluntary Cleanup Brownfields Site Assessment	11	13	2	18.2	0.1	0.2
Technical Analysis Division - Water Quality Planning and Assessment Section	39	42	3	7.7	0.5	0.6
Water Permits and Resource Management Division/Water Quality Division - Water Quality Assessment Section	6	6	0	0	0.1	0.1
Water Permits and Resource Management Division/Water Supply Division - Public Drinking Water Section	85	107	22	25.9	1.1	1.4
Waste Permits Division - Municipal Solid Waste Section	20	19	-1	-5	0.3	0.3
Waste Permits Division - Industrial and Hazardous Waste Section	0	1	1	-	0	0
Enforcement Division	12	9	-3	-25	0.2	0.1
Field Operations Division	4	8	4	100	0.1	0.1
Subtotal	7346	7197	-149	-2	97.1	96.8
Railroad Commission of Texas Oil and Gas Division	201	217	16	8	2.7	2.9
Texas Alliance of Groundwater Districts	20	21	1	5	0.3	0.3
Total	7567	7435	-132	-1.7	100	100

As required by Section 26.046 of the Texas Water Code, the report indicates the status of enforcement action for each instance of groundwater contamination. For purposes of the report, enforcement action includes any agency action which accomplishes or requires the identification, documentation, monitoring, assessing, or remediation of groundwater contamination. In general, regulatory programs are structured to achieve the desired degree of environmental protection and mitigation with the lowest possible level of agency oversight, and while the status of a contamination case may remain at an agency action level for a long period of time, physical activities related to the assessment and remediation may change often. The comparison of the level of agency action and the status or level of contamination assessment and mitigation allows a one-to-one correspondence between an agency's response (enforcement status) and the completion of the discrete phases in the progression of contamination investigation (activity status).

Table 5 presents the activity status of documented groundwater contamination cases during 2001. The table indicates the total number of documented cases by the agency and division or program with jurisdictional authority and indicates the activity status for the cases. Once groundwater contamination has been confirmed, either the regulated entity or the agency will address a groundwater contamination incident following a general sequence of actions until the investigation concludes no further action is necessary.

All of the 7,435 cases listed in the 2001 report have documented groundwater contamination, or were reported as having documented contamination in previous reports. The activity status for each case is identified in the report's tables. As Table 5 indicates, "no activity" has occurred in 120 reported cases that are awaiting confirmation of contamination. Contamination is confirmed (validated) in 1,031 cases. The largest number of cases (3,912) are involved in ongoing investigations. Additionally, 193 cases are in corrective action planning. Action has been implemented in 1,029 cases, and 219 cases have an activity status of "monitor action." No further action is necessary for 983 cases that are designated as "action completed." No activity status was given for an additional 55 cases in which information was lacking concerning the 2001 activity status at the site.

Historically, the number of new groundwater contamination cases documented each year has been greater than the number of cases in which action was completed during the same year. This trend had held since the Committee began publishing the report in 1989, but in 2000 the trend reversed with 833 cases listed with action completed, and only 623 reported new cases. In 2001, 983 cases were listed with action completed, and only 571 new cases reported. The number of new cases had annually

decreased up to 1994, but increased in 1995, 1996, 1997, 1998 and 1999, before falling sharply in 2000. At this time, insufficient data exists to determine whether this situation is due to groundwater protection programs implemented by regulatory agencies, or simply due to a "maturing" of monitoring and enforcement programs that results in fewer occurrences of contamination being discovered and placed under enforcement. The number of cases where action has been completed has annually increased (with exception in 1994, and a slight decline in 1997), which would suggest that regulatory programs are "maturing".

Table 5. Documented Groundwater Contamination Cases by Agency/Activity Status, 2001

Agency/Division	Total Cases (2001) ¹	New Cases (2001) ²	Activity Status Code ³							
			0	1	2	3	4	5	6	None
Texas Natural Resource Conservation Commission/Texas Commission on Environmental Quality										
/Enforcement Division	9	1	1	2	1	2	1	0	1	1
/Field Operations Division	8	0	1	0	4	0	0	0	1	2
/Remediation Division - Corrective Action Section	550	45	11	25	219	113	123	112	37	12
/Remediation Division - Petroleum Storage Tanks Section	5540	275	0	776	3344	0	691	0	729	0
/Remediation Division - Superfund Cleanup Section	60	4	0	3	17	12	12	17	2	0
/Remediation Division - Superfund Site Discovery & Assessment	16	5	0	5	0	0	0	0	0	11
/Remediation Division - Voluntary Cleanup Section	609	123	74	10	279	23	130	38	54	0
/Remediation Division - Voluntary Cleanup/Innocent Landowner	217	75	0	179	0	0	0	0	13	25
/Remediation Division - Voluntary Cleanup Section/Brownfields Site Assessment	13	2	2	1	4	0	0	0	6	0
Technical Analysis Division	42	0	29	13	0	0	0	0	0	0
/Waste Permits Division - Underground Injection Control	1	0	0	0	0	0	0	1	0	0
/Waste Permits Division - Municipal Solid Waste Section	19	0	1	0	4	7	2	5	0	0
/Water Quality Division	6	0	0	0	1	0	3	5	0	0
/Water Supply Division	107	11	1	0	0	0	0	0	106	0
Subtotal	7197	541	120	1014	3873	157	962	178	949	51
Railroad Commission of Texas/Oil and Gas Division	217	28	0	17	39	36	66	41	18	0
Texas Alliance of Groundwater Districts	21	2	0	0	0	0	1	0	16	4
Total	7435	571	120	1031	3912	193	1029	219	983	55

Notes:

1. Total number of groundwater contamination cases documented or under enforcement during calendar year 2001.
2. Number of new cases documented or under enforcement during calendar year 2001.
3. Activity Status Codes: 0—No Activity; 1—Contamination Confirmed; 2—Ongoing Investigation; 3—Corrective Action Planning; 4—Corrective Action Implementation; 5—Monitoring Action; 6—Action Completed
 Facilities may have more than one Activity Status Code

STATE MANAGEMENT PLAN FOR PESTICIDES IN GROUNDWATER

Proposed Federal Rule

On June 26, 1996, under its authority granted by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the EPA published a proposed rule in the Federal Register on pesticides and groundwater state management plan regulation. The EPA has determined that, due to their groundwater contamination potential, some pesticides commonly used nationwide may pose an unreasonable adverse effect on the environment, and should be banned unless effective local management measures are developed and implemented through state pesticide-specific management plans. The draft rule would require the development and implementation of management plans as a condition for the legal sale and use of specifically identified pesticides. In this way, the proposed rule would restrict the use of these pesticides that have been identified as probable or possible human carcinogens and have been shown to leach to groundwater. Once the rule is final states will have two years to develop and submit management plans, and the EPA would then have six months to approve or reject the state's proposed management plans. Upon approval, the state would have to implement the proposed management plans.

Alachlor, atrazine, metolachlor, and simazine are the first four pesticides to be identified as problem pesticides under this proposed rule. Unless the rule is changed, when the final rule is issued and becomes effective, these pesticides will be prohibited for sale and use within a state that does not have an EPA-approved pesticide-specific state management plan (SMP). The rule, if adopted, would potentially affect a large segment of the state's agricultural economy relying upon these pesticides.

Under the proposed rule, to preserve the continued use of the EPA-listed pesticides, a state will need to develop pesticide-specific SMPs that address the potential for groundwater contamination for each pesticide. The EPA is asking states to develop two different kinds of SMPs: a generic plan and pesticide-specific plans. Both types contain 12 components defined by the EPA, which are listed in Table 6. Even though the development of a generic SMP is voluntary, it serves an important function in laying out the basic framework for managing pesticide use in a state. A generic SMP can also serve as a basis for the development of the pesticide-specific SMPs. The pesticide-specific SMPs will contain specific actions necessary to prevent groundwater contamination by the identified pesticide.

The proposed federal rule was expected to have been issued in a final form by late 2000 or early 2001, but a change in administration in EPA has resulted in a reevaluation of priorities and programs. EPA is still considering adoption of a final rule but is studying the possibility of some changes such as the inclusion of surface water protection requirements or the method used to determine which pesticides are subject to the rule.

Table 6. Twelve Components of Pesticide Management Plans

<i>Statement of Philosophy</i>
<i>Agency Roles and Responsibilities</i>
<i>Legal Authority</i>
<i>Resources</i>
<i>Geographic Planning</i>
<i>Monitoring</i>
<i>Preventative Measures</i>
<i>Response to Groundwater Contamination</i>
<i>Enforcement</i>
<i>Public Awareness and Participation</i>
<i>Information Dissemination</i>
<i>Records and Reporting</i>

Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater

Plan Development

The Texas Commission on Environmental Quality (TCEQ) is charged by state law to develop management plans for agricultural chemicals, with the advice of the TGPC, to address chemicals such as pesticides that may threaten groundwater quality. Specifically, these plans are developed for the protection and enhancement of water quality pursuant to federal statute, regulation, or policy, and include management plans for the prevention of water pollution by agricultural chemicals and agents.

Section 26.407 of the Texas Water Code was enacted in 1989 and addresses the plans required by the EPA under its proposed rule.

At the request of TCEQ, the TGPC developed the *Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater* in 1996. This plan, as a generic SMP for the state, will serve to guide the development of pesticide-specific SMPs as needed. The plan was developed as a joint effort of the agency members of the Agricultural Chemicals Subcommittee (ACS). The plan received input from agricultural producer, manufacturer and environmental interest groups. The TGPC effort considered the guidance provided by the EPA's *Ground-Water Protection Strategy* and the *Final Guidance for Pesticides and Ground-Water State Management Plans*. The effort is an update of the *Texas State Management Plan for Agricultural Chemicals in Ground Water*, published by the TGPC in 1991.

The goal of the *Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater* is to protect the existing quality of groundwater and to prevent the degradation of state groundwater resources. This goal does not mean zero-contaminant discharge, but rather that the normal use of pesticides be conducted in a manner that will maintain present groundwater uses and not impair potential uses of groundwater or pose a public health hazard. All usable and potentially usable groundwater resources are subject to the same protection afforded by the state's nondegradation policy goal.

The SMP describes the general policies and regulatory approaches the state will use to protect groundwater resources from risk of contamination by pesticides. The document describes a generic coordinating mechanism among all responsible and participating agencies during the implementation of the SMP and provides for specific responses when it is deemed necessary to develop a pesticide-specific SMP. The SMP reflects the state's philosophy toward groundwater protection and recognizes the importance of agricultural resources to the state's economy. The seven major principles that govern the development of the SMP are listed in Table 7.

Table 7. Major Principles Governing Texas State Management Plan Development

<i>Agricultural pesticides are beneficial and important to the production of food, fiber supply, and the economy of the state.</i>
<i>State and local governments should be the first line of groundwater protection, with this effort being complemented by federal expertise and information.</i>
<i>The use of pesticides, while important for protection of public safety and health, should not impair any use of groundwater or cause a public health hazard.</i>
<i>Drinking water supplies, including groundwater resources used to supply private wells, should be protected.</i>
<i>Groundwater quality monitoring by state agencies, local government, and other interested parties can be directed, as funds allow, to areas determined by the state to be vulnerable to nonpoint source contamination.</i>
<i>Pesticide use and Best Management Practices (BMPs) should be tailored to prevent contamination of groundwater from pesticides</i>
<i>Education and voluntary implementation of BMPs should be the primary emphasis of the plan.</i>

The TGPC submitted the draft Texas State Management Plan for Prevention of Pesticide Contamination of Ground Water to Region 6 of the EPA for review in March, 1996. Agricultural Chemicals Subcommittee representatives provided a formal response to the EPA's comments on the draft SMP in October, 1997 outlining the proposed changes to the SMP agreed to with EPA. A final draft of the generic Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater was submitted to EPA in June, 1998 for its concurrence.

In 1999, however, EPA identified additional issues requiring further changes to the generic SMP. Changes were negotiated in 2000, and the TGPC approved a revised generic SMP. In addition to TGPC approval, the participating agencies with formal responsibilities in the SMP provided letters of commitment and confirmation for their roles in the SMP to the TCEQ. The Executive Director of the TCEQ formally transmitted the revised generic SMP to EPA in May, 2000. A letter acknowledging concurrence with the Texas generic SMP was received in June, 2000 from the Regional Administrator of EPA's Region 6 Office. *Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater* (TGPC, 2001a) was published in January 2001.

Groundwater Monitoring Plan for Atrazine

One of the twelve SMP components is groundwater monitoring for identified pesticides in vulnerable areas of the state. The Agricultural Chemicals Subcommittee (ACS) recognizes this component as an essential element in the Texas SMP to determine where pesticides impacts to groundwater occur. The ACS has pursued various groundwater monitoring projects in the past few years in order to develop and test different aspects of a pesticide monitoring plan. These projects have focused on atrazine, a major-use pesticide in Texas, with the potential to contaminate groundwater. A key issue identified early in the monitoring process was a lack of adequate resources, for both manpower for the sampling effort and the high cost of laboratory analysis for pesticides.

The ACS has used several innovative methods to address resource issues. Soil and aquifer vulnerability analyses are employed to identify susceptible areas where the specific pesticide of concern is being used. Pesticide vulnerability analysis utilizes the SPIM (Soil Pesticide Interaction Matrix) procedure developed by the TCE and an aquifer vulnerability analysis developed by TCEQ. Monitoring efforts are then focused in these areas, thus saving resources that would have been needed for a state-wide effort. In order to lower the cost of laboratory analysis, the monitoring plan uses a new, low cost field analytical method (Immunoassay) as a screening tool. Only the samples with significant concentrations of atrazine are sent to the laboratory for confirming analysis. Coordination with other organizations during their data collection efforts provides a savings in manpower for sample collection and for analytical work.

Monitoring efforts have been significantly enhanced through a cooperative sampling effort among the TWDB, a number of Groundwater Conservation Districts, and TCEQ. The TWDB or a Groundwater Conservation District obtains a sample and the TCEQ conducts the screening analyses for atrazine. Through this cooperative effort approximately 660 samples were obtained in 2000, 520 samples in 2001, and 400 samples through August of 2002. Using an immunoassay screening method, all 1,580 of these samples were analyzed for atrazine and approximately 920 samples for metolachlor. In these three years, most of the aquifers in the state have been screened for atrazine, and the remaining aquifers should be sampled in the next two years. Thus far cooperative monitoring has revealed a number of atrazine detections in the central panhandle but only an occasional low-level detections of atrazine or metolachlor in the rest of the state. The cooperative monitoring atrazine detections lie in the same region of the panhandle as previous investigative monitoring detections. All cooperative monitoring detections have been below the MCL.

Response to Contamination

The state's response to a confirmed pesticide contamination of groundwater is outlined in the generic *Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater* (TGPC, 2001a). The determination of the appropriate response considers a number of key issues: whether the contamination is from a point or nonpoint source; the extent of the contamination; the level of contamination, either above or below the drinking water MCL or health advisory level (HAL); the travel time from the application of the pesticide at or near the soil surface until it reaches the water table; and, whether the source of contamination was the result of present usage of the pesticide or usage under previous labels, which allowed greater levels of use.

A careful assessment is necessary to answer these questions and determine what if any changes in usage (such as the application of best management practices) will diminish the contamination. The responses to be made under specific conditions are outlined in the generic SMP and would be set out in more detail in a pesticide-specific SMP under a final EPA rule.

Investigative and follow-up monitoring efforts have been conducted twice yearly in the central panhandle since 1998 to address atrazine detections under the generic SMP in public water supply wells in the panhandle. Atrazine was first detected in several wells through the Public Drinking Water Monitoring Program. The vast majority of atrazine detections were below the drinking water MCL. Only two wells had laboratory-confirmed concentrations of atrazine above the MCL. Affected public water supply systems took appropriate actions and delivered drinking water that was well within public health standards. The results of investigations indicate that most of the atrazine contamination cases are due to point sources, such as in one situation where an improperly closed abandoned water well may have served as an atrazine migration pathway. There is some possibility of nonpoint source contamination as well, where the source of atrazine may be agricultural fields or runoff collection in playa lakes. Recommendations have been developed by the ACS related to the suspected point source activities, and educational and other appropriate regulatory activities have been initiated. Additional work is planned to further assess the possibility of nonpoint sources.

TEXAS GROUNDWATER PROTECTION STRATEGY

Background

The Legislature has charged the Committee (TGPC) with developing and updating a comprehensive groundwater protection strategy for the state that provides guidelines for the prevention of contamination and for the conservation of groundwater and provides for the coordination of the groundwater protection activities of the agencies represented on the TGPC.

With the recent state focus on the need for assuring a high quality supply of groundwater and recognizing the programmatic changes that have occurred since the state's first groundwater protection strategy was developed, the TGPC decided in January 2001 to update the state's first groundwater strategy, published in 1988. There have been several efforts by the Committee to describe the groundwater protection programs and authorities of state agencies, including the Texas Ground Water Protection Profiles, 1991, and later in each of the Committee's annual Joint Groundwater Monitoring and Contamination Reports. In addition, the TGPC has worked on an unpublished Comprehensive State Groundwater Protection Plan, a non-mandatory U.S. Environmental Protection Agency supported effort. These past efforts have helped the Committee identify problem areas and have aided groundwater protection program improvements.

To develop the document, the Committee formed a Groundwater Protection Strategy Work Group to begin drafting the document. The Committee was briefed on the progress of the work group through strategy status reports and discussion at regularly scheduled meetings of the TGPC. The Committee also worked directly on the *Strategy* through special-call meetings of the TGPC for the specific purpose of review and comment on the draft *Strategy*.

State Groundwater Protection Strategy

The Committee approved the release of the draft *Strategy* for public comment at its October 28, 2002 meeting. Notice of document availability and a 30-day opportunity for comment on the Strategy will be published in the Texas Register. A copy of the draft *Strategy* will be placed on the TGPC's website for public access. Comments will be submitted to the Committee for its review and action. The Committee anticipates final publication of the *Strategy* in early 2003.

In developing the current draft *Strategy*, the TGPC recognized that the state has numerous successful groundwater programs spread among local and state governmental agencies, and research institutions. Therefore, a key part of the *Strategy* is documenting how the current regulatory, outreach, and research programs work to protect groundwater resources. A second fundamental component of the *Strategy* is the identification of protection gaps in program implementation or coordination. TGPC believes that this approach to developing the *Strategy*, grounded firmly within the existing policy and programmatic directions given by the Legislature, will result in a document that sets realistic objectives for success and provides a road map for action over the next five years (the TGPC's short-term planning horizon). The *Strategy*:

- # details the state's groundwater protection goal as established by the Legislature;
- # explains the state's efforts to characterize the occurrence, quality, and quantity of groundwater resources and discusses various assessment approaches used in program implementation;
- # describes the roles and responsibilities of the various state agencies involved in groundwater protection and discusses the TGPC as a coordinating mechanism;
- # provides examples of how the various state agencies implement groundwater protection programs through regulatory and non-regulatory models;
- # explains how the local, state, and federal agencies coordinate management of groundwater data for the enhancement of groundwater protection;
- # discusses the role that research plays in understanding groundwater's importance and the importance of coordinating research efforts;
- # provides an overview of the groundwater public education efforts in the state;
- # discusses public participation in establishing and implementing groundwater policy;
- # lays out a planning process for updating the *Strategy*;
- # proposes for inclusion in the next *Strategy* an identification and ranking of significant threats to the state's groundwater resource, consideration of the vulnerability of groundwater resources to such threats, and a prioritization of actions to address those threats; and

- # provides recommendations and possible actions to protect groundwater.

Strategy Recommendations

The following draft recommendations for action reflect a consensus of TGPC members and do not necessarily reflect all of the views and policies of each participating organization. The recommendations are not listed in any order of priority. The recommendations, for the most part, require joint agency efforts under the coordination of the TGPC. The draft recommendations primarily address operational and resource issues, and efforts to implement some of these recommendations has already begun.

Strengthen Communication with the State's Water Planning Efforts

- # The TGPC needs to strengthen the lines of communication and information sharing with the Regional Water Planning Groups. This lack of communication between these two groups is a gap in the TGPC's ability to coordinate the state's groundwater protection strategy with the state's water supply planning efforts led by the TWDB.

Improve Groundwater Data

- # Gaps exist in the data collection and data assessment processes. The existing ambient groundwater monitoring program needs more resources to sample additional sites to provide a better picture of ambient groundwater conditions statewide. The suite of chemicals that are analyzed needs to be expanded to include organic and synthetic chemicals. While site specific assessment of "hazardous wastes" in groundwater is covered by a number of state and federal programs, other substances in groundwater, such as nitrate and arsenic, that may be deemed "naturally occurring" need better assessment. The TGPC should develop recommendations on the design of an ambient groundwater monitoring system that will meet the needs of all member agencies. Any new monitoring of domestic water wells would be on a voluntary landowner participation basis.
- # Because data management is a dynamic process, accepted data management standards may become outdated, superseded by a better, newer standard, or simply no longer needed. It is imperative that these data management standards be reviewed and amended to facilitate information exchange. The TGPC must review and revise its groundwater data management standards and guidelines, and must actively participate in the various data management advisory groups.

- # The need for a geographic information systems/relational database for waste site and groundwater contamination site characterizations is critically important to any planning process. All available data sources should be checked for validity via accepted quality assurance and quality control measures, and once accepted, placed into an electronic format with a spatial data element for indexing in a relational database. The location and geometry of contamination plumes should be placed in a GIS format.
- # The TDLR has developed a relational database that includes water well driller information, the water well drillers' reports, and reports of encountering undesirable water zones when wells are drilled, in a spatial coordinate (latitude and longitude) database. There are a large number of existing hard-copy water well drillers reports that need to be converted to a digital format and made accessible through this system.

Coordinate Research

- # Traditional groundwater research organizations, generally associated with universities, in both the agricultural and natural resource sectors, have developed the experience, infrastructure, and technical expertise needed to address complex research needs. However, there is no formal mechanism to link the agencies on the TGPC that need to have research performed together with the organizations that are capable of performing the research. The TGPC should form a research subcommittee to identify interagency research needs and to provide a coordinated approach for discussion with federal agencies for funding. The results of this work should be shared with the TCEQ for its consideration under the research model authorized under Texas Water Code Sections 5.1191 - 5.1193.

Increase Public Outreach

- # Virtually all water used in rural homes which are not on a public drinking water system comes from domestic/private water wells. There are no specific programs which routinely examine the quality of groundwater being consumed by Texans utilizing these wells. More water quality information is needed to develop assessments of water quality and health risk for the domestic/private well owner segment of the population. The state should undertake a voluntary program targeted at private well owners, designed to identify problem areas and assist private well owners in understanding these groundwater quality issues.
- # Public educational materials and outreach programs are needed to educate domestic/private well owners on drinking water quality and potential

health risks. More support needs to be given to educational efforts for targeted geographic areas of concern for high concentrations of naturally occurring groundwater contaminants and on various treatment options available to the domestic/private well owner. Support is also needed for educational efforts to develop and deliver effective educational materials which target potential sources of contamination, such as abandoned well closures. Special effort should be made to develop programs designed to reach and serve the state's high growth areas.

- # An effective on-site wastewater system removes wastewater from the home, treats and disposes of the wastewater, and protects our water resources. An on-site wastewater system requires maintenance in order to maintain proper operation and environmental protection. Unlike a centralized sewer system maintained by a city or water district, maintenance of an on-site system is the responsibility of the homeowner. A statewide OSSF failure rate of 13 per cent and the growing dependence on these systems in the suburban fringe around urban areas continues to create human health and environmental concerns.

Therefore, the state should continue to support the efforts of the On-site Wastewater Treatment Research Council, the Texas Cooperative Extension, the TCEQ's on-site wastewater programs, and local governments in their efforts to develop and deliver effective educational materials which address OSSF maintenance to prevent failures. In addition, the government agencies involved in OSSF regulation and outreach may want to consider developing programs specially designed to reach and serve the state's high-growth counties.

- # Oftentimes, state agencies' web pages are not organized around groundwater as a theme, making it difficult for the general public to find information on the state's groundwater protection efforts. To remedy this, the TGPC should establish, on its web page, links to key groundwater information residing at state agencies and educational institutions.

Commit to Development of Periodic Updates and Improvements to the State Groundwater Protection Strategy

- # The first groundwater strategy was developed in 1988 and has not been updated prior to this document. The TGPC should update the Strategy every 6 years. As part of the ongoing process for developing the next Strategy, the TGPC intends to conduct an analysis to identify and rank threats to groundwater quality, taking into consideration the vulnerability of groundwater resources to such threats and using available data, and to prioritize possible actions which address those threats. Such an analysis would provide a valuable tool to both TGPC member agencies and state legislators as they set groundwater protection policy.

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APPENDIX 2 - TEXAS GROUNDWATER PROTECTION COMMITTEE RULES

Title 31. NATURAL RESOURCES AND CONSERVATION

Part XVIII. TEXAS GROUNDWATER PROTECTION COMMITTEE

Chapter 601. GROUNDWATER CONTAMINATION REPORT

Subchapter A. GENERAL PROVISIONS RELATING TO PUBLIC FILES AND JOINT REPORT

§601.1. Purposes of Rules.

The purpose of these sections is to implement duties and responsibilities assigned to the committee under the Texas Water Code, §26.406, concerning the maintenance by certain state agencies of public files containing documented cases of groundwater contamination and the publication by the committee, in conjunction with the commission, of annual groundwater monitoring and contamination reports and to establish general policies of the committee to guide such implementation.

§601.2. Applicability.

These rules specifically apply to each state agency or organization having membership on the committee. The committee is composed of the Texas Natural Resource Conservation Commission (or effective September 1, 2002, the Texas Commission on Environmental Quality), the Texas Department of Health, the Texas Department of Agriculture, the Railroad Commission of Texas, the Texas Water Development Board, the Texas Alliance of Groundwater Districts, the Texas Agricultural Experiment Station, the Bureau of Economic Geology of the University of Texas at Austin, the State Soil and Water Conservation Board, and the Water Well Drillers and Water Well Pump Installers Program of the Texas Department of Licensing and Regulation.

§601.3. Definitions.

The following words and terms, when used in this chapter, shall have the following meanings unless the context clearly indicates otherwise.

- (1) **Act**--House Bill 1458 (71st Session) codified as Texas Water Code §§26.401 - 26.407.
- (2) **Commission**--Texas Natural Resource Conservation Commission (or effective September 1, 2002, the Texas Commission on Environmental Quality).
- (3) **Committee**--Texas Groundwater Protection Committee.
- (4) **Documented groundwater contamination**--A case of groundwater contamination where an agency has an established procedure for making a determination based on the quality of groundwater and the information pertinent to making the determination is maintained by the agency under §601.4(b) of this title (relating to Public Files).

- (5) **Enforcement action**--Any action of the agencies, identified in §601.2 of this title (relating to Applicability), which accomplishes or requires the identification, documentation, monitoring, assessing, or remediation of groundwater contamination.
- (6) **Groundwater**--Water below the land surface in a zone of saturation.
- (7) **Groundwater contamination**--The detrimental alteration of the naturally occurring physical, thermal, chemical, or biological quality of groundwater. Furthermore, groundwater contamination, for purposes of inclusion of cases in the public files and the joint groundwater monitoring and contamination report, shall be limited to contamination reasonably suspected of having been caused by activities or by entities under the jurisdiction of the agencies identified in §601.4(b) of this title (relating to Public Files), except in the case of an underground source of drinking water granted an aquifer exemption by the commission with concurrence from the United States Environmental Protection Agency in accordance with 40 Code of Federal Regulations, Parts 144, 145, and 146, and 30 TAC Chapter 331 (Underground Injection Control); and affecting groundwater which contains a concentration of:
- (A) less than or equal to 10,000 milligrams per liter (mg/liter) of dissolved solids; or
 - (B) greater than 10,000 mg/liter if it is:
 - (i) currently extracted for beneficial use such as domestic, industrial, or agricultural purposes; or
 - (ii) hydrologically connected with, and with the potential for contaminant movement to, a surface water body or another zone of groundwater which has a concentration of less than or equal to 10,000 mg/liter of dissolved solids.

§601.4. Public Files.

(a) Subject to the limitations provided by the Texas Water Code, §§26.401-26.407 (the Act), and the Open Records Act, Texas Civil Statutes, Article 6252-17a, information collected, assembled, or maintained by the committee and the agencies having responsibilities related to protection of groundwater under the Act is public record open to inspection and copying during regular business hours.

(b) Each agency having the responsibilities related to the protection of groundwater under the Act shall maintain a public file of all documented cases of groundwater contamination that are reasonably suspected of having been caused by activities regulated by the agency.

§601.5. Joint Groundwater Monitoring and Contamination Report.

In conjunction with the commission, the committee shall publish not later than April 1 of each year a joint groundwater monitoring and contamination report covering the activities and findings of the committee made during the previous calendar year. The report must:

- (1) describe the current status of groundwater monitoring programs conducted by or required by each committee agency or organization at regulated facilities or in connection with regulated facilities;
- (2) contain a description of each case of groundwater contamination documented during the previous calendar year and of each case of groundwater contamination documented during previous years for which enforcement action was incomplete at the time of issuance of the preceding report; and
- (3) indicate the status of enforcement action for each case of groundwater contamination that is included in the report.

APPENDIX 3 - PUBLICATIONS OF THE TGPC

Publications 2001-2002

Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater, 2001a: TNRCC Publication Number SFR-070/01, January 2001.

Joint Groundwater Monitoring and Contamination Report—2000, 2001b: TNRCC Publication Number SFR-056/00, April 2001.

Joint Groundwater Monitoring and Contamination Report—2001, 2002: TNRCC Publication Number SFR-056/01, August 2002.

Previous TGPC Publications

Joint Groundwater Monitoring and Contamination Report, 1990: TWC, Publication No. Z 94, April 1990.

Activities of the Texas Groundwater Protection Committee, Report to The 72nd Legislature, 1991a: TWC Report, January, 1991.

Joint Groundwater Monitoring and Contamination Report - 1990, 1991b: TWC, Publication No. Z 104, April 1991.

Texas State Management Plan for Agricultural Chemicals in Ground Water, 1991c: Agricultural Chemicals Subcommittee, June 1991.

Texas Ground Water Protection Profiles, 1991d: unpublished TWC Report, June 1991.

Joint Groundwater Monitoring and Contamination Report - 1991, 1992: TWC, Publication No. R 92-02, May 1992.

Activities of the Texas Groundwater Protection Committee, Report to the 73rd Legislature, 1993: TWC Report R93-01, January, 1993.

Joint Groundwater Monitoring and Contamination Report - 1992, 1993: TNRCC, Publication No. SFR-1, November 1993.

Joint Groundwater Monitoring and Contamination Report - 1993, 1994: TNRCC, Publication No. SFR-6, May 1994.

Texas Groundwater Protection Educational Brochure, 1994a: Texas Natural Resource Conservation Commission (TNRCC) Publication Number GI-88, November 1994.

Activities of the Texas Groundwater Protection Committee, Report to the 74th Legislature, 1994b: TNRCC Publication Number SFR-14, December 1994.

Joint Groundwater Monitoring and Contamination Report—1994, 1995a: TNRCC Publication Number SFR-20, April 1995.

Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater (Educational Brochure), 1995b: TNRCC Publication Number GI-141, June 1995.

Joint Groundwater Monitoring and Contamination Report—1995 1996a: TNRCC Publication Number SFR-36, April 1995.

Texas Ground-Water Data Dictionary, 1996b: TNRCC Publication Number AS-109, August, 1996.

Texas Groundwater Program Directory, 1996c: TNRCC Publication Number GI-226, October 1996.

Activities of the Texas Groundwater Protection Committee, Report to the 75th Legislature, 1996e: TNRCC Publication Number SFR-47, December 1996.

Joint Groundwater Monitoring and Contamination Report—1996, 1997: TNRCC Publication Number SFR-56, June 1997.

Texas State Management Plan for the Prevention of Pesticide Contamination of Groundwater, 1998a: Draft TNRCC Publication, June 1998.

Joint Groundwater Monitoring and Contamination Report—1997, 1998b: TNRCC Publication Number SFR-56/98, June, 1998.

Activities of the Texas Groundwater Protection Committee, Report to the 76th Legislature, 1998c: TNRCC Publication Number SFR-047/98, November 1998.

Landowner's Guide to Plugging Abandoned Water Wells, 1999a: TNRCC Publication Number RG-347, April 1999.

Joint Groundwater Monitoring and Contamination Report—1998, 1999b: TNRCC Publication Number SFR-56/98, October 1999.

Texas Groundwater Protection Committee and the Texas Agricultural Extension Service, 2000a, *Well Plugging - Plugging Water Wells in Texas*; TAEX TEX-A-SYST Educational Video SP-71.

Activities of the Texas Groundwater Protection Committee, Report to the 77th Legislature, 2000b: TNRCC Publication Number SFR-047/00, November 2000.

Joint Groundwater Monitoring and Contamination Report—1999, 2000c: TNRCC Publication Number SFR-56/99, December 2000.

Publications of the Predecessor Ground Water Protection Committee

Texas Ground Water Protection Activities—1986, 1986: TWC Report Z-79, October 1986.

Texas Ground Water Protection Strategy, 1988: TWC Report Z-80, January 1988.