

The Texas Joint Committee on Water Resources



Interim Report to the 78th Legislature

November 2002

Texas Joint Committee on Water Resources Report to the 78th Legislature

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**Texas Joint Committee on Water Resources
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Damn the oil, I want water.

W.T. Waggoner
Electra, Texas, 1911¹

¹ W.T. Waggoner (1911). Museum exhibit on history of oil and gas exploration in Texas, The Bob Bullock Texas State History Museum, Austin, Texas. Website for Bullock Museum retrieved August 23, 2002, from <<http://www.tspb.state.tx.us/tspb/TSHM/Home/Home.htm>>

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INTRODUCTION

For Texas to prosper long into the future, we must ensure we have a supply of water that is safe, that is easily replenished, and that is used efficiently. By making our water use and infrastructure more efficient and secure, and by utilizing innovative financing and technologies to conserve existing sources and tap new sources of water, Texas water will be safe and available for future generations of Texans.

Texas Governor Rick Perry²

Texas has made great strides, and must continue moving forward, in designing proactive and comprehensive water policy. The past decade has seen an historic modernization of Texas water law, particularly with the enactment of Senate Bill, 1 in 1997, and Senate Bill 2, in 2001. To ensure ongoing development and improvement of water policy and water law in Texas, the 77th Texas Legislature, in Article 5 of SB 2, created the Joint Committee on Water Resources (see Appendix A Joint Committee enabling language).

INTERIM CHARGE

JOINT COMMITTEE ON WATER RESOURCES

The committee shall conduct an interim study and make recommendations regarding:

- increasing the efficient use of existing water resources;
- developing sufficient long-term water financing strategies;
- improving existing water conveyance systems;
- water marketing;
- determining the appropriate role of environmental and wildlife concerns in water permitting and water development; and
- protection of the natural condition of beds and banks of the state-owned watercourses.

² Governor Rick Perry (2002) Press Release, Retrieved on September 9, 2002 from <http://www.governor.state.tx.us/pressoffice/archives/april2002/release_042902desalinationplant.htm>

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BACKGROUND AND LEGISLATIVE HISTORY

Water has always been a defining issue for Texas - shaping the state's history and character. The importance of this precious commodity continues to expand. As is the case worldwide, ever increasingly, Texas' economic prosperity, growth and development are, and will be, determined by the quality and quantity of our water. Since 1997, there has been a constantly increasing state-wide focus on water resource management policy and law.

In 1997, the 75th Texas Legislature enacted Senate Bill 1 - the Brown-Lewis Water Management Plan - a comprehensive water resource management bill that restructured the process of state water planning. This major water planning law proved to be a pivotal moment in Texas water law history.

Among the legacies from that legislation are the efforts of the state's 16 Regional Water Planning Groups, created by SB 1 to assess the water needs in each region, and to develop regional plans to meet those needs. Built on the foundation of those regional water plans, in December, 2002, the Texas Water Development Board adopted the first Senate Bill 1 state water plan, "Water for Texas - 2002."³

The development and passage of Senate Bill 1, in 1997, was characterized by an unprecedented process of invaluable stakeholder involvement. The ongoing implementation of Senate Bill 1 has brought about a "democratization" of Texas water policy imperatives; by driving decision-making to the local level, and by promoting both the need for regionalization and the need for non-parochial, state-wide perspective for all aspects of water resource management. The omnibus nature of Senate Bill 1 encompassed a wide range of water resource management issues: from surface water to groundwater; from water planning, water supply and water markets to water-related data development and dissemination; from water utilities to drought preparation and response.

During the 76th Session, in 1999, SB 1911 illustrated the degree to which groundwater issues had moved to the forefront. By 1999, the increased pressure on

³ Texas Water Development Board. (2002, January) *Water for Texas - 2002, Volumes I, II and III*. Retrieved September 20, 2002, from http://www.twdb.state.tx.us/publications/reports/State_Water_Plan/2002/FinalWaterPlan2002.htm

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groundwater to meet water supply needs led to a proliferation of bills to create single-county groundwater districts. Many of these districts were intended to prohibit or restrict the movement of groundwater. SB 1911 was compromise legislation, which created 13 “temporary” groundwater districts and was intended to provide the state the opportunity to study the issues of groundwater management and groundwater district creation from a state-wide policy perspective.

Throughout the 76th interim, (June, 1999 - December, 2000) the Senate Natural Resources Committee continued to work closely with many stakeholders involved in water issues across the State, representing surface water, groundwater, water infrastructure and financing, coastal, rural, agricultural, municipalities, industries, agencies, environmental interests, and others.

One component of the Senate Natural Resources Committee’s 76th Interim Study of the state’s groundwater resources was the work of the Consensus Groundwater Stakeholder Group. In the interest of replicating the successes of the stakeholder process that led to the development of Senate Bill 1, the Senate Natural Resources Committee sought out the knowledge and insights of stakeholders actively involved in groundwater and groundwater district issues across the state.

The Committee’s goal was to empower this Consensus Stakeholder Group to, free of political or legislative pressures, independently identify the most pressing groundwater management challenges facing Texas and to develop consensus policy recommendations to resolve those challenges.

To that end, in the Spring of 2000, the Senate Natural Resources Committee convened an initial forum of approximately 200 stakeholders. Through a self-selection process, this large forum evolved into the core group of about 31 individuals viewed as representing identifiable and diverse groundwater interests. This core Stakeholder Group developed significant and meaningful *consensus* legislative recommendations to address major groundwater issues, and submitted their report to the 76th Interim Senate Interim Natural Resources Committee.⁴

The 77th Legislature, in 2001, enacted Senate Bill 2, by Brown/Lewis, often

⁴ Almost all of the statutory language recommended in The Consensus Groundwater Stakeholder Group’s report was eventually included in legislation enacted by the 77th Texas Legislature, primarily in SB 2. See website for the Consensus Group’s report, entitled “Future of Groundwater Management in Texas: A Consensus Building Effort - May 2, 2000 through August 31, 2000”
<<http://www.twdb.state.tx.us/publications/Grants/FinalGrantReports/FinalRecommendations.htm>>

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referred to as the surface water/groundwater conjunctive management water bill (see Appendix B for full summary of key Senate Bill 2 provisions). The development and passage of Senate Bill 2 continued the Senate Bill 1 legacy of ongoing stakeholder involvement, from local, regional and state levels, including:

- Regional Water Planning Groups
- Local Groundwater Districts
- Agricultural and Rural Interests
- Industry -- of all types and in all areas of the state
- Environmentalists
- State Agencies
- Small Business
- Counties and Municipalities
- River Authorities
- Texas Rural Water Association

Senate Bill 2 advances the fundamental realization that water management in Texas must become more cohesive and less fragmented. Water itself is inextricably linked throughout every stage of the hydrological cycle. Water policy and water management frameworks must reflect these interconnections, and must conjunctively address both surface water and groundwater, water quality and water quantity.

In brief, Senate Bill 2:

- Creates the Texas Water Advisory Council, an ongoing water policy forum consisting of legislators, statewide elected officials, state agency heads, and public members.
- Significantly improves the management of and planning for surface water and groundwater, at the local, regional and state levels.
- Provides streamlining and regulatory incentives for desalination, brush control, weather modification, regionalization, public private partnerships, and agricultural uses of water.
- Provides for major advances in the development of good science and good information relating to both surface and groundwater.
- Strengthens the ability of groundwater conservation districts to effectively and cooperatively manage Texas' valuable groundwater resources.
- Amends the Water Code to define "agricultural uses" of water, and elevates it on the lists of (1) purposes for which water can be used, and (2) preferences for the appropriation of water.
- Creates or ratifies 35 new groundwater districts
- Creates the Water Infrastructure Fund to provide financial incentives for all entities to facilitate the implementation of water projects recommended through the state and regional water plans.

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- Creates the Rural Water Assistance Fund to provide financial assistance to smaller, rural water suppliers, and to ensure the public outreach and technical assistance critical for these smaller rural water systems to succeed.

As already noted, to ensure the ongoing development and improvement of water policy and water law in Texas, Senate Bill 2 also created the Joint Committee on Water Resources; and charged the committee to study and report to the 78th Legislature on key water challenges facing Texas today.

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TEXAS JOINT COMMITTEE ON WATER RESOURCES

The Joint Committee on Water Resources conducted four public hearings during the 77th Interim. As indicated in the four hearing Agendas below, the Joint Committee's first, organizational, hearing featured policy overviews of all of the committee's charges. The three subsequent hearings provided more in-depth evaluation and consideration, by focusing on only one or two charges per hearing.

- December 13, 2001, Austin, Texas
Overview of all Joint Committee charges
- February 27, 2002, Austin, Texas
Invited and Public Testimony on:
 - Environmental & Instream Flows, and
 - Protection of State-Owned Riverbeds
- April 23, 2002, Amarillo, Texas
Invited and Public Testimony on:
 - Water Marketing & Improving Water Conveyance Systems
- June 12, 2002, Austin, Texas
Invited and Public Testimony on:
 - Increasing Efficient Use of Existing Water Resources, and
 - Developing Sufficient Long-Term Financing Strategies

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Texas Joint Committee on Water Resources

Senator J.E. "Buster" Brown
Co-Chair
Senator David Bernsen
Senator Teel Bivins



Representative David Counts
Co-Chair
Representative Robby Cook
Representative Robert Puente

AGENDA Organizational Meeting -- Invited Testimony Only --

10:00 am, Thursday, December 13, 2001
Capitol Extension, Room E1.038, Austin, Texas

- I. Call to Order and Roll Call
- II. Welcome & Overview of Joint Committee on Water Resources (JCWR)
 - Co-Chairman Brown
 - Co-Chairman CountsAdoption of Joint Committee Rules
- III. Overview of Water Management in Texas
 - Jeff Saitas - Executive Director, TNRCC
- IV. Review of JCWR Interim Charges for the 77th Interim:
 - Environmental & Wildlife Concerns in Water Permitting & Development
 - Dean Robbins - Texas Water Conservation Association
 - Myron Hess - National Wildlife Federation
 - Increasing the Efficient Use of Existing Water Resources
 - Carole Baker - The Subsidence District
 - Water Marketing
 - Russell Johnson - Bracewell and Patterson
 - Improving Water Conveyance Systems
 - Ron Freeman - Texas Water Reserves
 - Protection of State-owned Riverbeds
 - Dr. Larry McKinney - Senior Director of Aquatic Resources, TPWD
 - Statement from Commissioner Combs, TDA
 - Developing Sufficient Long-term Financing Strategies
 - Craig Pedersen - Executive Administrator, TWDB
 - Tom Duck, Texas Rural Water Association
- V. Other Business
- VI. Announcements & Future Hearings
- VII. Recess

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Representative Robert Puente

AGENDA

10:00 am, Wednesday, February 27, 2002
Capitol Extension, Room E1.012, Austin, Texas

- I. Call to Order and Roll Call
- II. Committee Business
 - Co-Chairman Brown
 - Co-Chairman CountsAdoption of Minutes from December 13, 2001
- III. Invited Testimony
 - Environmental & Wildlife Water Permitting and Development
 - Statutory - Regulatory Panel
 - Margaret Hoffman, Texas Natural Resource Conservation Commission
 - Larry McKinney, Texas Parks & Wildlife Department
 - Gary Powell, Texas Water Development Board
 - Martin Hubert, Texas Department of Agriculture
 - Environmental Flow Strategies Panel
 - Dean Robbins, Texas Water Conservation Association
 - Bill West, Guadalupe Blanco River Authority
 - Joe Beal, Lower Colorado River Authority
 - Stakeholder Panel
 - Myron Hess, National Wildlife Federation
 - Ben Vaughan, III, Coastal Conservation Association
 - George Ward, University of Texas, Austin
 - Protection of State-Owned Riverbeds
 - 4x4 Task Force Update, Texas Parks and Wildlife Department
 - Stakeholder Panel
 - Con Mims, Nueces River Authority
 - Jeanie Dullnig, Task Force Member, Landowner Perspective
 - Brian Sybert, Sierra Club
 - Joe F. Alejandro, Task Force Member, River User Perspective
 - Carol Smith, American Motorcyclists Association Community Council
- IV. Public Testimony
 - Environmental & Wildlife Water Permitting and Development
 - Protection of State-Owned Riverbeds
 - Other Charges of the Joint Committee on Water Resources
- V. Future Hearings and Other Business
- VI. Recess

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Representative Robby Cook
Representative Robert Puente

AGENDA

12:45 p.m., Tuesday, April 23, 2002
San Jacinto Room, Ambassador Hotel
3100 I-40 West, Amarillo, Texas

- I. Call to Order and Roll Call
- II. Committee Business
 - Co-Chairman Brown
 - Co-Chairman Counts
 - Adoption of Minutes from February 27, 2002
- III. Opening Comments
- IV. Invited Testimony
Water Marketing and Improving Existing Water Conveyance Systems
 - Statutory - Regulatory Panel
 - Carolyn Brittin, Texas Natural Resource Conservation Commission
 - Bill Mullican, Texas Water Development Board
 - Martin Hubert, Texas Department of Agriculture
 - Mr. T. Boone Pickens, Mesa Water
 - Mr. Carl Kennedy, Panhandle Landowner
 - Ms. Kathy Viatella, Environmental Defense
 - Mr. Lynn Ray Sherman, Texas Water Development Company
 - Water Managers Panel
 - Kent Satterwhite, Canadian River Municipal Water Authority
 - Jim Conkwright, High Plains Underground Water Conservation District No. 1
 - John Grant, Colorado River Municipal Water District
 - C.E. Williams, Panhandle Groundwater Conservation District
- V. Public Testimony
Water Marketing and Improving Existing Water Conveyance Systems
Other Charges of the Joint Committee on Water Resources
- VI. Future Hearings and Other Business
- VII. Recess

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Texas Joint Committee on Water Resources

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Co-Chair

Senator David Bensen

Senator Teel Bivins



Representative David Counts

Co-Chair

Representative Robby Cook

Representative Robert Puente

AGENDA

10:30 a.m., Wednesday, June 12, 2002

Room E1.012, Capitol Extension

Austin, Texas

- I. Call to Order and Roll Call
- II. Committee Business
 - Co-Chairman Counts
 - Adoption of Minutes from April 23, 2002
- Invited Testimony
- III. **Update on Drought Conditions**
 - Jack Colley, Division of Emergency Management
- IV. **Increasing the Efficient Use of Existing Water Resources**
 - Dale Beebe-Farrow, Texas Natural Resources Conservation Commission
 - Dr. Larry McKinney, Texas Parks and Wildlife Department
 - Martin Hubert, Texas Department of Agriculture
 - Agricultural Water Efficiencies - Allan Jones, Texas Water Resources Institute
 - Water Conservation - Carole Baker, Texas Section AWWA
 - Conjunctive Management of Surface and Groundwater - Paul Thornhill, LCRA
- V. **Developing Sufficient Long-Term Financing Strategies**
 - State Financing Overview -- Kevin Ward, Texas Water Development Board
 - Water Financing Options -- Monte Akers, Texas Municipal League
 - Public Private Partnerships -- Jeff Taylor, City of Houston
 - Federal Dollars: Is Texas Getting its Fair Share? - Tom Ray, Lockwood, Andrews & Newman
- VI. Public Testimony
 - Increasing the Efficient Use of Existing Water Resources**
 - Developing Sufficient Long-Term Financing Strategies**
- VII. Other Business
- VIII. Recess

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INCREASING THE EFFICIENT USE OF EXISTING WATER RESOURCES

If we are to grow as urban and industrial areas, we must conserve our water. No community, no city, no state can maintain a population or industrial growth whose demands for water exceed the dependable capacity of its water supply.

Albert Rollins
Oct. 14, 1954⁵

Although all of the committee's charges are inherently interrelated to some degree, one of these issues is a strong common denominator that underlies and interconnects policy discussions on all of the charges. This "cross-cutting" issue is ***increasing the efficient use of existing water resources***.

This topic is often thought of as being synonymous with **water conservation**, which is certainly an imperative water management tool in and of itself. However, **increasing the efficient use of water** extends far beyond what most of us think of as residential water conservation efforts, and incorporates a wide range of critical water management strategies for all three major sectors of water users:

- domestic;
- industrial, commercial and institutional; and
- agricultural.

For example, the following proposal would promote pilot demonstration projects to promote water-use efficiencies in Texas' agricultural sector. This project description, as indicated by italic script, is excerpted from the Texas Water Development Board's website.

Agriculture Conservation Demonstration Project

<<http://www.twdb.state.tx.us/IrrigationDemoProject/agdemoindex.htm>>

Evaluation and Demonstration of Cost-Effective Irrigation Technologies in a Controlled Environment in Order to Sustain and Enhance Groundwater Supplies in Texas

Program Goal: To conserve the vital groundwater resources in a manner that will sustain and enhance irrigated agriculture in the State of Texas.

To meet this Goal, the State will provide grant funding to demonstration pilot

⁵ Quoted in, Anderson, C. (June 2002) Water Conservation: Letter from the Texas Section Chair. *TEXAS H₂O The Official Newsletter of the Texas Section - American Water Works Association*, p. 2.

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projects in irrigation areas to assess the profitability and effectiveness of efficient water and energy conserving irrigation technologies.

The Program will develop comprehensive data, utilizing large-scale demonstration sites, to assess the cost-effectiveness of selected technologies, their impact on productivity and groundwater levels. By demonstrating these technologies the State could help overcome the farming community's inability to finance their utilization of water conserving technology. The State could then provide strong financial incentives for efficient use of water and energy by means of sustainable lending programs designed to increase the affordability of the technologies.

This Program is a function of four primary activities. These are:

- Assemble a "Blue Ribbon Panel" of irrigation experts from Local, State, and Federal agencies, academia, and agricultural industry, for the purpose of design and oversight of the Program. Activities would include actual technical design of the demonstration sites, developing screening criteria to be used in site selection, and establishment of monitoring and analysis protocols including a Memorandum of Agreement to be utilized with all participating producers within the demonstration site.*
- The next major effort would be focused on actual site selection and entering into cooperative agreements with all participating irrigated agricultural producers. Once all agreements are in place, the conservation and monitoring equipment prescribed for a particular demonstration site will be installed and calibrated.*
- For a period of 8-10 years, the Program will focus on the collection of hydrologic and production data from the demonstration sites and from nearby control areas.*
- Finally, a final report will be prepared and submitted to both the agricultural community and to the Legislature presenting the economic and hydrologic benefits and costs of the Program and an assessment of the transferability of the Program throughout the remainder of the irrigated agricultural community in Texas.*

All technical elements of the Program will be designed utilizing the Blue Ribbon Panel described above. The Program will select two to three demonstration sites, envisioned to be approximately 10 square miles each, in areas of both deficit and non-deficit irrigation. A uniform Memorandum of Agreement (MOA) will be developed to reflect grant funding for implementation of selected technologies, operating and data monitoring protocols and for fair compensation for any negative impact on the participating farmers' production income. For an area to be selected as a demonstration site, all irrigators within the demonstration site would be required to participate in the Program and agree to all terms of the MOA.

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The program will cover a 10-year period to ensure statistical validity of the results. The costs to the program would include the cost of implementing the selected irrigation technologies, installation of monitoring and telemetric networks, operation and maintenance costs and interim reporting of results.

Project Participants would include representatives from:

- *Groundwater Conservation Districts,*
- *TWDB,*
- *Texas A&M University System,*
- *Texas Tech University,*
- *Texas Department of Agriculture,*
- *Texas State Soil and Water Conservation Board, and*
- *Texas Legislature.*⁶

Another fundamental policy consideration relating to water-use efficiency is the **distinction between water-use efficiency and drought management.**

“Water-use efficiency refers to a permanent behavioral change or application of technology that changes the baseline level of water use. Drought management practices are enacted in response to an emergency in either water supply or water capacity. Water supply is the volume of raw water available to a population. Capacity refers to a water utility’s treatment and distribution capability. Focusing on drought after it arrives forces water managers to react to immediate needs with costly remedies to balance competing interests in a charged atmosphere.

It has been the experience of many Texas cities that water use increases as soon as drought management restrictions are lifted, causing what is known as the “hydro-illogical” cycle. The hydro-illogical cycle refers to the phenomenon in which drought management measures may induce a feeling of denial among citizens, who return with relief to wasteful water consumption once restrictions are lifted.

On the other hand, wise water use practices are a win-win situation: reducing demand on a natural resource, reducing water bills, and avoiding the capital costs of building more water utility capacity.”⁷

The committee heard extensive invited and public testimony on this issue, which

⁶ Texas Water Development Board, *Agriculture Conservation Demonstration Project Concept Paper*. Retrieved September 20, 2002, from <<http://www.twdb.state.tx.us/IrrigationDemoProject/agdemoindex.htm>>

⁷ Gerston, J., MacLeod, M. & Jones, C.A. (September 2002) “Efficient Water Use for Texas: Policies, Tools, and Management Strategies” Prepared for Environmental Defense, by the Texas Agricultural Experiment Station. <<http://twri.tamu.edu>> under the technical reports page. p. 3.

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included a comprehensive report, entitled "Efficient Water Use for Texas: Policies, Tools, and Management Strategies," published by the Texas Water Resources Institute (TWRI) and the Environmental Defense regional office in Austin, Texas. The report was published by TWRI, as technical report 200, in September 2002. This complete and focused handbook addresses the full range of water efficiency policy issues.

The purpose of the handbook is to provide citizens and policy makers with examples of what has been accomplished in Texas through water conservation, as well as to provide information on strategies which have been used elsewhere that hold promise in Texas.

The handbook provides an overview of strategies Texas cities and water districts have utilized to most efficiently use water resources, including encouraging homeowners to utilize low-flow devices, demand management measures, and structuring water rates to reward conservation. The handbook also discusses ways in which water conservation has been accomplished by industries and public institutions. For example, the handbook illustrates how industries are recycling and reusing water in manufacturing processes, highlights water conservation efforts of the hotel industry, and illustrates how San Antonio and other entities are promoting the reuse of reclaimed wastewater.

A significant portion of the handbook describes opportunities to conserve water in agricultural activities. For example, the handbook illustrates how research and extension efforts are promoting the adoption of efficient irrigation technologies and management strategies, as well as developing crops that better survive droughts. The report is available as an Adobe Acrobat file on the TWRI website, <<http://twri.tamu.edu>> under the technical reports page.

The Joint Committee on Water Resources heard testimony focused on increasing the efficient use of existing water resources at its June 12, 2002, public hearing in Austin, Texas, from witnesses representing state agencies, universities, water associations, river authorities, groundwater conservation districts, and the public.

Witnesses presented proposals, concerns, and suggestions for legislative or regulatory remedy, including specific proposals relating to:

- municipal water conservation efforts; and
 - the need to expand state and regional water conservation planning requirements to include identification of water conservation goals, implementation, reporting, and enforcement requirements.
- **Municipal Conservation Efforts as Criteria for State Financial Assistance**
The need for additional water supplies and the financing needed to develop those supplies for the next 50 years is great. Naturally, competition for state financial assistance will also be intense. According to the TWDB's "Water for Texas - 2002," twelve of the sixteen regional water plans include conservation or reuse as a significant source of future water supplies during the next 50 years. If conservation efforts were incorporated as a primary criterion for state funding

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eligibility, then funding decisions could be prioritized to reward municipalities already demonstrating exemplary conservation as indicated through per capita consumption (the total amount of water produced divided by the number of persons served).⁸

Deciding when and where to utilize State funds will be an important part of the overall planning effort. Some believe that state funds should be spent where they are most needed, and where they are needed first. Proven efficiency or conservation programs, as evidenced by per capita consumption, could be a fundamental step in determining need. A municipality that has “tightened the belt” and implemented sound conservation practices is more in need of additional supplies than a similar-sized municipality that chooses to be less efficient. The difference in annual water use for a city of 500,000 can vary by approximately 40,000 acre-feet (50%) as the per capita use increases from 150 gallons per person per day (g.p.d.) to 200 g.p.d. The simple table below illustrates this point.

City	Population	Per Capita Use	Annual Use (acre-feet)
A	500,000	150	84,000
B	500,000	170	95,000
C	500,000	200	112,000

It is important to consider actual existing conservation efforts and not just the promise of great savings through conservation efforts to be implemented in the future.⁹

A witness representing the American Water Works Association, Texas Section, presented an analysis of Texas' current conservation planning and identified possible strategies for the future. The analysis presented by this witness is summarized below, as indicated by italic type.¹⁰

Tie Water Planning to Quantified Conservation Goals and Reporting
Relative to other states, Texas is one of the more pro-active in water and conservation planning. However, six to eight other states already tie conservation planning to real reporting triggers and enforcement vehicles, such as water rights permits, wastewater

⁸ Testimony by Greg Ellis, General Manager of the Edwards Aquifer Authority, to the Joint Committee on Water Resources, June 12, 2002 Hearing, Austin, Texas

⁹ Id.

¹⁰ The following is a summary of testimony presented to the Joint Committee on Water Resources, by Carole Baker, Texas Section of American Water Works Association.

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discharge permits, or loans and grants.

Texas currently captures data on several key elements of the puzzle, including:

- per capita usage data by Water User Group (WUG), that includes all water utilities serving over 500 people, and*
- conservation plan information, through procedural requirements and applications for loans and grants.*

Texas lacks, however, any workable linkage between the numerical data (per capita usage) and the conservation plans. There is also a breakdown in the process from the design of the plan to actual accountability or implementation of the plan. The biggest challenge for Texas to overcome is the lack of cost/benefit analysis and data. We have to look at funding issues and pilot programs to meet this need.

Developing a water-use profile for each customer category - residential, landscape, industrial, commercial, institutional and agricultural - can require a significant amount of data analysis or “crunching.” For example, understanding average annual demand versus monthly and daily demand, quantifying outdoor use versus indoor use, ascertaining peak flows, ferreting out top users and inefficient users, and determining other characteristics of water demand are time-consuming and complex tasks. Identifying where, when, and how water is used is a critical pathway to determining which conservation measures will yield the most reliable water savings.

An important component of conservation planning is an analysis of all measures and incentives that could be applied to reduce water demand. Evaluating each option for cost-effectiveness, public acceptance, and impact on water and wastewater capital facility plans, rates and revenues, and the environment is crucial to developing the best mix of program incentives and measures for a particular system. Finally, other key ingredients of a well-planned conservation program are a unifying implementation strategy and ongoing monitoring and evaluation activities that allow the program to be adjusted as needed to realize goals.

Key Criteria of Effective Conservation Planning Process:

- Identify conservation goals*
- Develop a water-use profile and forecast*
- Evaluate planned facilities*
- Identify and evaluate conservation measures*
- Identify and assess conservation incentives*
- Analyze benefits and costs*
- Select conservation measures and incentives*
- Prepare and implement the conservation plan*
- Integrate conservation and supply plans, modify forecasts*
- Monitor, Evaluate, and Revise Program as Needed*

Suggested Strategies Recommended to the Joint Committee:

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- *Conservation Benchmarking:*
Numerically define achievable conservation goals by benchmarking water utility data, in order to objectively evaluate the status of each utility's per capita usage as it relates to their conservation planning. This process could be coordinated by the the Regional Water Planning Groups (RWPGs).
- *Cost Benefit Analysis of Water-Use Efficiency Strategies*
Begin data collection and cost benefit analysis of efficient water use strategies by evaluating existing water conservation strategies and pilot programs now being implemented in cities with high water-use efficiency ratings.
- *Amend Conservation Planning Process:*
Implement an updated approved conservation plan process with the TWDB and TCEQ grant/loan and permitting programs. Updated process could establish or require future conservation goals with associated regulatory and/or financing incentives and disincentives to encourage meeting the goals (tie goals to state permitting and financing processes).
- *Legislative Changes to Clarify State and RWPG Authority:*
Linking conservation goals to existing state programs and requirements would require legislation to:
 - *clarify the role and authority of Regional Water Planning Groups (RWPGs) to define water efficiency standards to meet the goals and strategies they identify for inclusion in the state water plan;*
 - *direct each RWPG to designate a committee to evaluate water conservation plans submitted by water suppliers within their region, and to translate the plan information into working tasks to be used in public education programs conducted by the RWPGs and the state; and*
 - *authorize the TWDB and/or TCEQ to require accountability and reporting, and to provide state level enforcement of plans that are developed at the local and regional levels.¹¹*

¹¹ Summary of testimony by Carole Baker, Texas Section of the American Water Works Association, to the Joint Committee on Water Resources, June 12, 2002, Hearing, Austin, Texas

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SUFFICIENT LONG-TERM FINANCING STRATEGIES

Introduction

In January 2002, the Texas Water Development Board (TWDB) released the first grassroots State Water Plan entitled *Water for Texas - 2002*. The plan is the fruit of SB 1, 75th Texas Legislature which initiated a bottom-up planning approach to address the water needs of Texas for the next 50 years. The plan has documented significant capital costs for implementing water management strategies to meet these water supply needs.

The 2002 State Water Plan incorporates 16 Regional Water Plans that cumulatively identify approximately \$18 billion in key water management strategies and projects to meet Texas' water supply needs through 2050. A common thread in the development of recommendations in the regional water planning process is a desire to implement the plans in a way that ensures that the future needs of all Texans are met. Without plan implementation, Texans clearly will not have the ability to meet their future water needs.¹²

Although local governments, regional authorities, and other political subdivisions will play an important role in paying for the estimated \$18 billion in strategies and projects, many communities will be unable to afford it alone. Senate Bill 2, 77th Texas Legislature, directed the 16 Regional Water Planning Groups to examine the financing needed for their regions to implement the water management strategies and projects identified in the 2002 State Water Plan and to formally report their findings to the Texas Water Development Board.¹³

To address this statutory requirement, the TWDB directed the regional water planning groups to submit Infrastructure Financing Reports. The 16 Regional Infrastructure Financing Reports were submitted to the TWDB by June 1, 2002 as mandated by Senate Bill 2. The TWDB reviewed these reports and consulted with potentially impacted groups and other interested persons regarding the information reported and the recommendations made by the Regional Water Planning Groups. The culmination of these reports and analysis can be found in the *Texas Water Development Board Infrastructure Financing Report*. This report contains valuable information on the needs of the regional water planning groups in implementing SB1 water planning strategies.

¹²Letter to Texas legislators prefacing the Infrastructure Financing Report, *Infrastructure Financing Report*, Texas Water Development Board, October 1, 2002.

¹³*Id.*

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The TWDB does report, however, that:

“while careful scrutiny was afforded the information in the 16 Regional Infrastructure Financing Reports, the reported data is dependent upon local political subdivisions' representations of their own ability to pay for needed projects. The short time frame provided to develop the Infrastructure Financing Report did not enable the Texas Water Development Board the opportunity to evaluate this information in great detail for each political subdivision. Therefore, the funding needs discussed in this report are primarily a reflection of the desires of the local political subdivisions.”

Further, the TWDB supplements the individual reports from the regions with a more fiscally conservative alternative evaluation. The TWDB further states that:

“In the future, the Texas Water Development Board will establish necessary guidelines for the Regional Infrastructure Financing Reports to ensure that data is available to allow more detailed evaluations.”

As required by SB 2, the infrastructure report has been submitted to the Legislature and is partly reproduced in the following text. This report is the product of financing suggestions and surveys from the Regional Water Planning Groups and further analysis by the Texas Water Development Board. This report has not been written by the members of the Joint Committee on Water Resources or by any staff of the Texas House of Representatives or the Texas Senate connected to the joint committee.

For a complete copy of the report, please visit the Texas Water Development Board website at: www.twdb.state.tx.us/index.htm or contact the TWDB at: 1700 North Congress, P.O. Box 13231, Austin, TX 78711-3231. Phone: (512) 463-7847.¹⁴

Infrastructure Financing Report

Background

The significance of the 2002 State Water Plan is that it is founded on 16 regional water plans developed by citizen volunteers from all across Texas. No previous State Water Plans were developed using a bottom-up planning approach. *Water for Texas – 2002* documents significant capital costs for implementing water management strategies to meet the water supply needs of all Texans for the next 50 years. The *Infrastructure Financing Report (IFR)* is a follow-up report that builds on the information presented in the State Water Plan, but focuses on the ability of local political subdivisions to pay for the recommended water management strategies and projects included in the 16 regional water plans. An analysis by the TWDB examines the financing needs of the

¹⁴ The reproduction of the report begins here and ends at the start of the section on Federal Funding Options.

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local political subdivisions over the next three biennia. Results of this analysis demonstrate that current financial assistance programs administered by the TWDB could significantly enhance local ability to implement water management strategies, provided that funding for those programs is appropriated.

This report recommends a number of actions that will be needed to meet the challenges for funding water management strategies over the coming decade. The Regional Water Planning Groups (Planning Groups) recommend increasing the state role in financing water management strategies where needs are great, public health or the environment is at risk, or local resources are inadequate. This enhanced state role should provide for distribution of funds in fiscally responsible, but flexible ways, including grants, loan deferrals, and loan subsidies.

In order to maintain the integrity of the data reported in the 16 Regional Infrastructure Financing Reports and the 2002 State Water Plan, this report does not address changes in funding needs caused by subsequent shifts in population growth patterns or by new local, state or federal initiatives. Water supply projects and funding needs analyzed in this report are for the most part directly linked to the Regional Infrastructure Financing Reports and the 2002 State Water Plan. In 2007, the TWDB will develop a new State Water Plan and Infrastructure Financing Report that will reflect new conditions.

Water Investment Needs of the Next Half Century

The population of Texas is expected to nearly double over the next 50 years. With that growth comes an expected increase in the demand and need for new water supplies. The 2002 State Water Plan estimates the capital cost of meeting the needs of existing and future Texans at nearly \$18 billion. Of this amount, **approximately \$16.2 billion will be the responsibility of local political subdivisions that provide water for municipal uses and \$575 million will be the responsibility of political subdivisions and individuals involved in irrigated agriculture.** The \$1.2 billion balance is associated with water supply projects to meet the needs of mining, manufacturing, and electric power generation interests. It is assumed that individuals and private entities involved in these activities will pay for needed projects. Implementation of all of these projects is necessary to adequately meet the State's water needs.

Water Investment Needs Associated with Municipal Water Supply Projects

Based on a report recently issued by the Water Infrastructure Network, a significant portion of the total cost to build, operate, and maintain water systems is typically financed by local citizens and private businesses through their utility bills. This appears to hold true in Texas. According to data provided by the Texas Bond Review Board, **local governments in Texas issue bonds to support water-related projects at a rate of approximately \$1.3 billion per year.** This figure represents debt issued for all types of water infrastructure projects including water supply, wastewater, and flood

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control. **The TWDB provides financing for water infrastructure projects at a rate of approximately \$600 million per year.** Although these numbers represent far more than just water supply projects, their context within this report is important in that it demonstrates that local governments are currently paying for a significant portion of costs associated with water development projects in Texas. The role currently played by TWDB is to assist local governments in meeting a portion of their financing needs.

In order to determine what portion of the \$16.2 billion could be paid for locally, **the Planning Groups conducted a survey of all local political subdivisions that had a reported municipal water supply need and water management strategy or project recommended in the 16 regional water plans.** The Planning Groups received responses that accounted for \$13.5 billion in projects out of the \$16.2 billion. Based on the survey responses, the Planning Groups report that approximately 55 percent of estimated capital costs for municipal water supply projects could be paid for using local resources, such as utility revenues, tax revenues, and local debt issuance. This is equivalent to \$7.4 billion out of the responded to \$13.5 billion.

To account for the non-responded to capital costs of \$2.7 billion, the TWDB estimated the “cannot pay” fraction of the responded to \$13.5 billion. The result was an estimated non-reported “cannot pay” amount of approximately \$1.2 billion. The \$1.2 billion was then allocated to each planning region pro rata, based on the region’s share of the total \$2.7 billion. This resulted in an additional \$1.5 billion that TWDB estimates local political subdivisions can afford over the next 50 years. The overall effect is that **local political subdivisions can potentially pay for \$8.9 billion in capital costs out of the \$16.2 billion estimated. This results in a financing shortfall for municipal projects of approximately \$7.3 billion over the next 50 years, with over half of the funding shortfall occurring in the next three biennia.** From region to region, the amount of the funding shortfall varied significantly. For example, Region B (Wichita Falls area) reported a funding shortfall of just over \$1 million over the next 50 years, while the South Central Texas Region (Region L) funding shortfall was estimated at over \$3.6 billion. It is important to note that the State Water Plan identified regions C, H, and L as having the highest capital costs for all water supply project needs, accounting for nearly 75 percent of the \$18 billion total. The amount of the estimated funding shortfall attributable to these same three regions is just over \$6 billion or 83 percent of the total shortfall. Although Region P is included in the table, Region P did not have any water supply needs or capital costs associated with water management strategies in the adopted regional water plan.

The survey responses did not indicate the specific reasons for local political subdivisions' inability to pay for all of the capital costs or how survey questions may have been interpreted. TWDB is not able to verify on what basis a local political subdivision may have indicated an inability to pay for a project while another may have indicated an ability to pay. However, the TWDB guidelines for completing the financing survey provided that each political subdivision should assume using current utility revenue sources combined with implementing necessary water rate and tax increases

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to help defray the costs for needed water projects.

Water Investment Needs Associated with Agricultural Water Conservation Projects

Some of the earliest research conducted on groundwater resources in Texas (circa 1915) by the United State Geological Survey focused on irrigated agriculture on the High Plains and the fact that groundwater was being produced at a rate greater than the rate of recharge. Through time, many subsequent reports have increasingly focused on the need to better manage and conserve these limited groundwater supplies. Almost all of the regional water plans recognized an inability to meet all water supply needs for irrigated agriculture. As a result, **the Planning Groups recommended approximately \$575 million in water management strategies to meet water supply needs for irrigated agriculture over the next 50 years.**

Most of the strategies are conservation related. TWDB analyzed the timing of the needed water supply and estimates a significant portion of the funding is needed in the next three biennia. It is important to note that the TWDB analysis assumes that agricultural water users would require state assistance to fully implement all of the recommended water management strategies included in the regional water plans.

Water Investment Needs Associated with Projects in Rural and Disadvantaged Communities

TWDB analyzed the reported financing needs over the next 50 years as provided by the Planning Groups to estimate the portion of the funding shortfall attributable to rural communities. **Based on those political subdivisions that reported a financing shortfall in the next 50 years, TWDB estimates approximately \$527 million in estimated capital costs is associated with nearly 100 projects in rural counties.** Of that amount, nearly 77 percent (\$404 million) was reported by the Planning Groups as unaffordable for rural communities.

The TWDB analysis of financing needs over the next 50 years for disadvantaged communities was more complex. To complete the analysis, TWDB reviewed the list of political subdivisions that reported a funding shortfall in the financing survey to identify those that would potentially be considered economically disadvantaged. The political subdivisions identified in the financing survey were compared to the list of eligible Economically Distressed Areas Program (EDAP) counties for fiscal year 2002. In addition, TWDB compared the political subdivisions list to non-EDAP eligible communities throughout Texas that were identified as disadvantaged in a TWDB report developed by Turner, Collie & Braden, Inc. in 2001.⁷ Based on these comparisons, **TWDB estimates approximately \$222 million in estimated capital costs is associated with nearly 50 projects that will benefit disadvantaged communities.** Of that amount, approximately 93 percent (\$207 million) was reported by the Planning Groups as unaffordable for disadvantaged communities.

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It is important to note that there is a significant amount of overlap in the numbers presented for rural and disadvantaged communities. TWDB identified approximately 25 projects with estimated capital costs of \$115 million for rural communities that are also considered disadvantaged. When the overlap is subtracted, **the combined capital cost estimate for projects in rural and disadvantaged communities totals approximately \$634 million over the next 50 years (Table 1)**. The combined funding shortfall is \$507 million over the same time period. This funding shortfall is only attributable to the infrastructure costs associated with new water supply development. It does not include additional funding needs related to drinking water and wastewater infrastructure needs, which is outside the scope of this report.

TABLE 1: Fifty Year Capital Cost Estimates and Funding Shortfalls for Projects in Rural and Disadvantaged Communities (in millions)

Estimated Capital Costs	# of Projects	Reported Shortfall	
Rural Communities	\$527	100	\$404
Disadvantaged Communities	\$222	50	\$207
Overlap: Communities that are both Rural and Disadvantaged	(\$115)	(25)	(\$104)
Total without Overlap	\$634	125	\$507

Water Investment Needs of the Next Decade

The timing of needed investments in water supply projects is of critical importance when considering anticipated population growth and the current budgetary climate. Over the next 10 years, Texas' population is projected to grow by nearly 18 percent. In regions C, H and L, where anticipated funding shortages are most pronounced, population growth over the next 10 years is at or above the projected statewide growth rate.

The total funding shortfall for municipal supply projects and agricultural water conservation measures and equipment is estimated at \$7.8 billion over the next 50 years. Putting that number into perspective, more than half of that amount (nearly \$4.1 billion) is needed for implementation of projects through fiscal year 2009. The majority of the costs (nearly \$4 billion) are associated with over 125 municipal supply projects ranging from implementation of municipal conservation programs to water purchase agreements, new well fields, pipelines, water treatment plant expansions, surface water diversions, reservoirs, wastewater reuse, and desalination facilities. A portion of the \$4 billion needed in these next three biennia is associated with projects in rural counties and disadvantaged communities (estimated by TWDB at approximately \$311 million). The next section of this report addresses how local political subdivisions propose to address the funding shortfalls for the current decade and the next 50 years.

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Addressing the Funding Shortfall – The Regions Respond

The responses to the financing survey provided valuable insight into how the Planning Groups and local political subdivisions propose to address funding shortfalls associated with water supply projects recommended in the regional water plans. While the Planning Groups recommend a wide range of options for addressing funding shortages, a review of the 16 Regional Infrastructure Financing Reports indicates the broadest support for the following four recommendations:

A tax on the sale of bottled water;
Appropriation of general revenue;
Increased authorization and use of state general obligation bonds; and
Appropriation of state matching funds to take full advantage of federal grant assistance.

Eight out of the 16 Planning Groups support some form of tax on the sale of bottled water as a dedicated source of revenue to help political subdivisions pay for water supply projects. Based on the fiscal note prepared for Senate Bill 2 during the 77th Legislative Session, a five cent surcharge on bottled water would have generated an estimated \$52.1 million in fiscal year 2002 increasing to an estimated \$65.2 million in fiscal year 2006.

The Planning Groups also reported that the financial assistance necessary to address the funding shortfall for municipal water supply projects would need to be roughly a two-thirds grant to one-third loan ratio. The specific mix reported by the political subdivisions surveyed is as follows: 65 percent of the funding shortfall should be addressed by grants, 20 percent of the funding shortfall should be addressed by below market loans, and 15 percent of the funding shortfall should be addressed by zero interest loans (Table 2).

TABLE 2: Estimated Financial Assistance Mix Needed to Address Funding Shortfall Associated with Municipal Water Supply Projects in the Next 3 Biennia (in millions)

	2004-2005	2006-2007	2008-2009	Totals	
Grants (65%)		\$804.2	\$595.1	\$1,176.5	\$2,575.8
Loans (35%)		\$433.0	\$320.5	\$633.5	\$1,387.0
Total Shortfall		\$1,237.2	\$915.6	\$1,810.0	\$3,962.8

Addressing the State Role – The Regions Respond

Responses by the Planning Groups reveal a strong recognition of the need for an expanded state role in implementing water supply projects identified in the regional water plans. Although financial assistance is the primary means by which the Planning

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Groups envision an expanded state role, they expect specific and general changes in existing TWDB programs to play a significant role as well. Review of the 16 Regional Infrastructure Financing Reports indicates the broadest support for the following recommendations:

The State Participation Program is an important financing program for optimum sizing of projects and should be fully supported;

Current state financial assistance programs are important programs and should be maintained and/or expanded;

The State should support research and development of desalination and other non-traditional technologies and strategies such as brush control, weather modification, and development of drought-resistant crops. State support should include funding of demonstration/pilot projects; and,

In establishing a priority system for projects receiving state assistance from programs that cannot fund all applicants, the State should give the highest priority to projects that are cost-effective and/or regional in scope, environmentally sensitive, address urgent public health or compliance needs, and consider the needs of small and rural communities.

Many of the recommendations put forth by the Planning Groups are already included in existing statutes or TWDB administrative rules. The complete list of policy recommendations provided by the Planning Groups, along with an indication of whether the recommendation is currently permissible under existing law or rule, is included in the Appendix.

Legislative Initiatives of the 77th Legislature

A dedicated source of revenue to fund water-related projects is not a new concept. During the 77th Legislative Session, legislators considered several types of revenue structures including a water rights fee, a retail water customer fee, a wastewater fee, and a surcharge on bottled water assessed on the manufacturer. Although none of these proposals were included in final legislation, the Legislature did establish state financing programs that could receive and be supported by future appropriations of cash from any source.

The Rural Water Assistance Fund (RWAFF) and the Water Infrastructure Fund (WIF) are designed to provide financing for water supply projects. TWDB is charged with administering both programs. Recognizing a critical state need, the RWAFF is intended to provide financial assistance to smaller, rural water suppliers at lower cost than is currently accessible to such entities, and to ensure the public outreach and technical assistance necessary for these smaller systems to succeed. The RWAFF can also assist small systems in participating in regional water projects, which benefit from economies of scale. Although the RWAFF was established to consist of appropriations, which would allow for the reduced interest rates and public outreach components, funds were not appropriated during the 77th Legislative Session.

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The TWDB implemented the RWAF program using general obligation bond proceeds, which were sold under the State's Private Activity Volume Cap. While TWDB is unable to use the bond proceeds to reduce interest rates below market level or provide for outreach and technical assistance, water supply corporations (taxable entities) benefit from this program because they can take advantage of lower tax-exempt interest rates, and any project financed through the RWAF can receive a sales tax exemption for materials and supplies used in the project. It is anticipated that the RWAF will play an important role in implementing water supply projects for rural areas. However, in order for the program to provide the types of loan subsidies and outreach assistance recommended by the Planning Groups, a cash funding source is required.

The WIF is designed to provide a mix of funding options including market loans, below market loans, zero interest loans, and grants. An additional provision allows for certain project elements that are key to obtaining environmental approvals (like planning, design, and permitting) to receive principal and interest payment deferrals for up to 10 years. In addition, the WIF is designed to provide up to 10 percent of funding in the form of a grant or zero interest loan to areas outside metropolitan statistical areas or for projects to serve economically distressed areas. All of the provisions that make the WIF an attractive and viable program for funding water supply projects require a cash source to implement. However, like the RWAF, the WIF was not funded during the 77th Legislative Session. Currently, TWDB has \$50 million in general obligation bond authorization "earmarked" for the WIF as required by House Joint Resolution 81 (77th Legislature). However, implementation of the WIF using bond proceeds does not achieve the intended purpose of the program to provide subsidized loans and grants. This is due to the fact that Article 3, §49-c of the Texas Constitution includes provisions that restrict the use of bond proceeds. This prevents TWDB from offering grants for water projects and from offering zero interest loans. In order to lower the interest rate on the bonds or to provide grants or assistance for many water conservation efforts, a cash source is necessary.

Finally, TWDB received legislative authorization and voter approval for House Joint Resolution 81 (77th Legislature). This provided the TWDB with an additional \$2 billion in general obligation bond authorization for use in funding water-related projects. The timing of the additional bond authorization was fortuitous given the estimated funding shortfall in the next decade. TWDB's analysis of how the additional bond authorization can help in meeting the needs of political subdivisions in the next decade is provided in the following section.

Texas Water Development Board Analysis – Addressing Funding Shortfalls in the Next Decade

As previously discussed, political subdivisions and the agricultural community will face funding shortfalls of approximately \$4.1 billion in the next three biennia. To assess how to fill the shortfall using state resources, TWDB analyzed several funding scenarios using cash appropriations and general obligation bonds as the funding sources. TWDB

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constructed three funding models that attempt to show two alternatives to directly respond to the requested financial assistance mix reported by the surveyed political subdivisions and one alternative using the WIF.

Municipal Water Supply Funding Needs in the Next Decade

To provide the financial assistance mix requested by the surveyed political subdivisions (two-thirds grants and one-third low interest loans), TWDB analyzed two funding scenarios; Model #1 assumes changes to constitutional provisions to allow bond proceeds to be used for grants and zero interest loans, while Model #2 assumed no changes in law. Results of the analyses for Model #1 indicate that a total of \$7.1 billion in cash appropriations would be needed from fiscal years 2004 through 2038 to provide the requested low interest loans and grants in the next three biennia. This model also indicates that \$820 million in cash appropriations would be needed in the next three biennia. Model #2 indicates that a total of \$3.2 billion in cash appropriations would be needed to provide the requested low interest loans and grants in the next three biennia, with all of the funding needed in the next three biennia. No additional cash appropriations would be needed beyond fiscal year 2009. Total general obligation debt issued by the TWDB would be approximately \$4 billion for Model #1 and approximately \$808 million for Model #2.

The TWDB also analyzed a financial assistance mix that is consistent with the statutorily authorized WIF program. The "Honor the WIF" model (Model #3) indicates that a total of \$2.3 billion in cash appropriations would be needed from fiscal years 2004 through 2037. This program would provide a funding mix of up to 10 percent in grants, with the balance provided in the form of low interest loans. This differs from that requested by the surveyed political subdivisions. The model also indicates that \$832.2 million in cash appropriations would be needed in the next three biennia. From fiscal year 2010 and beyond, it appears that the sales tax revenues from a bottled water tax (as recommended by the Planning Groups) could provide the needed cash to pay the future debt service on the bonds for the interest rate subsidies and loan deferrals. Total general obligation debt issued by the TWDB would be approximately \$3.6 billion under this scenario.

Unfortunately, modeling the necessary cash resources needed to address the type of state assistance requested by the political subdivisions under current law results in an extremely high front end cash appropriation (Model #2). Current constitutional provisions governing TWDB general obligation bonds, which do not allow for grants or zero percent loans for water projects from bond proceeds, cause this. Model #1 responds to the requested financial assistance mix and the results are more acceptable. However, implementation of a program financed in this manner would require changes in constitutional provisions to allow general obligation bond proceeds to be used for direct grant assistance and to provide zero percent loans.

The third model was constructed to illustrate financial assistance provided from the WIF

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(Model #3). The WIF was intended to fill the gaps in funding that the State felt appropriate. As previously discussed, the WIF is authorized to fund low or zero percent loans to rural and disadvantaged communities, low interest loans with 10 year deferrals for environmental, permitting and design costs, and low interest loans for construction of water projects. The results show a high front end cost but a relatively low cost to the State compared to either of the other two models. The comparative results are not surprising when considering that the requested assistance is a 65 percent, 20 percent, 15 percent mix of grants, low interest loans, and zero interest loans, respectively.

It is important to note that these results do not include any costs associated with TWDB administration. Additional administrative costs would be needed depending upon the amount of the financial assistance program desired.

Agricultural Water Conservation Measures and Equipment Needs in the Next Decade

Requirements to complete a financing survey did not extend to agricultural water supply projects. However, the 16 regional water plans include a total of \$575 million in estimated capital costs for agricultural water conservation measures and equipment over the 50 year planning period. TWDB examined these strategies and estimated that \$549 million out of the \$575 million in costs is associated with conservation-type activities. This represents 95 percent of the total estimated costs.

TWDB currently provides a market rate loan program for agricultural water conservation projects. Historically this program has produced relatively few loans as compared to other TWDB programs, indicating that the agricultural sector may require a different mix of financial assistance options. Based on this experience, TWDB assumed that all of the recommended water management strategies and projects for agricultural users would require state financial assistance.

The amount of funding needed for the next three biennia is estimated by TWDB at approximately \$133.2 million. To provide a financial assistance mix of 100 percent grants, TWDB analyzed two funding scenarios; Model #4 assumes TWDB would be appropriated cash to provide direct grant assistance to agricultural users, while Model #5 assumes TWDB would use bond proceeds to provide direct grant assistance. Cash appropriations would be needed for Model #5 to pay debt service on the bonds.

Results of the analyses are as follows: Model #4 indicates that a total of \$133.2 million in cash appropriations would be needed from fiscal years 2004 through 2009 to provide direct grant assistance. Model #5 indicates that a total of \$165.8 million in cash appropriations would be needed from fiscal years 2004 through 2015 to pay the debt service on the bonds issued. In the next three biennia, approximately \$82.9 million in cash appropriations would be needed to pay debt service on the bonds.

The TWDB also analyzed a funding scenario that is consistent with the currently

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authorized Agricultural Water Conservation Loan Program. This program provides loan assistance at market rates for agricultural water conservation projects. Model #6 indicates that TWDB could provide financial assistance for all of the recommended agricultural water management strategies using its existing agricultural bond authority without requiring any cash appropriations. Payments of principal and interest on the agricultural bonds would come from loan repayments to the program. However, this funding scenario is not realistic due to the lack of demand for loans for agricultural water conservation measures and equipment. TWDB experience demonstrates stronger demand for a grant program.

Texas Water Development Board Analysis – A More Conservative Perspective

The survey data presented in the 16 Regional Infrastructure Financing Reports indicates that some political subdivisions will be unable to pay for needed water supply projects in the future. This is based solely on the opinions of the political subdivisions that completed the survey. Based on historical financing practices, the TWDB is of the opinion that the amount of the funding shortfall may be overstated. Therefore, TWDB provides this additional evaluation to present a more conservative funding analysis for local political subdivisions, instead of relying solely on the reported survey data. The TWDB evaluation utilizes programs already authorized in statute, with a goal of limiting grant assistance to communities that demonstrate an economic need. In addition, the TWDB evaluation provides incentives for moving forward with pre-construction activities, such as environmental permitting, planning, etc., and regionalization. This is accomplished through loan subsidies and payment deferrals. It is important to note that agricultural funding needs estimated by TWDB are not reconsidered in this section of the report.

Sorting out the Data – 129 Water Supply Projects by 2010

TWDB analyzed data reported in the 16 Regional Infrastructure Financing Reports to identify those projects that will require financial assistance or incentives so that the water supplies necessary to meet the needs of the State's population in 2010 are provided in a timely manner. This analysis resulted in TWDB's identification of 129 projects with capital cost estimates of approximately \$4.9 billion that must be implemented by 2010. Of the total, TWDB estimates that local political subdivisions may need \$2.4 billion in financial assistance in the next three biennia to implement water supply projects. The financial assistance mix will need to include grants, below market loans, loan deferrals for environmental permitting activities, and loan deferrals for construction of regional projects.

The funding needs of disadvantaged and small communities make up a significant portion of the overall \$2.4 billion. Within the group of 129 projects, TWDB identified 47 projects with capital cost estimates of \$257.5 million that will provide water supplies for disadvantaged and small communities. Based on TWDB experience administering financial assistance programs, disadvantaged and small communities typically require

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significant amounts of grant assistance. This is partly due to the sparse populations and the low per capita incomes associated with these communities. Therefore, the TWDB evaluation provides for 100 percent grant assistance for projects in disadvantaged communities and 50 percent grant assistance for projects in small communities.

The TWDB evaluation includes the following financing goals to address the 129 projects recommended in the State Water Plan that must occur within the next decade:

100 percent grant assistance for disadvantaged communities – approximately \$156.65 million;

50 percent grant assistance for small communities – approximately \$50.43 million;

Below market loan assistance with a 10 year deferral of interest and principal payments to be used as incentives for larger projects to proceed with environmental permitting activities – approximately \$207.1 million;

Below market loan assistance for any project – approximately \$1.66 billion; and, State investments in regional construction projects, including a 10 year deferral of principal and interest payments – approximately \$300 million.

As previously discussed, the WIF is an existing TWDB program that was established by the 77th Legislature specifically with the goal of providing a funding mechanism for implementing projects recommended in the State Water Plan. The State Participation Program is an existing TWDB program that invests state dollars in large, regional projects that produce economic savings to local communities in the long term by over-sizing projects in the short term. All of the dollars invested through the State Participation Program are ultimately repaid to the State and made available to other regional projects. A number of projects recommended in the State Water Plan are potentially eligible for funding through the State Participation Program. TWDB's evaluation considers utilizing the statutorily authorized financing mechanisms of both of these existing programs to address the financial assistance needs of local political subdivisions in the next three biennia. The TWDB analysis does not assume any changes in law to accomplish the financing goals expressed.

Results of the Evaluation

To provide the financial assistance mix discussed above, TWDB developed financial models to estimate the cash appropriations needed to fully implement the WIF and expand the State Participation Program. Results of the analyses indicate that **a total of \$1.3 billion in cash appropriations would be needed from fiscal years 2004 through 2035** to provide grant assistance for disadvantaged and small communities, below market loans, below market loans with 10 year payment deferrals for environmental permitting activities, and additional state participation investments in regional facilities. **This amount of state investment would provide financial assistance for \$2.4 billion in new water supply projects. In the next three biennia, the model indicates that \$503.1 million in cash is needed.** It is important to point out that expansion of the State Participation Program would require legislative authorization

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to issue up to \$100 million in State Participation General Obligation Bonds in each of the next three biennia. Appropriations needed to pay the debt service on the State Participation Bonds are estimated and included in the figures presented.

In the 2004-2005 biennium, the Legislature would need to provide cash appropriations of approximately \$130.7 million to implement water supply projects through the WIF and State Participation programs. As discussed previously, the Planning Groups recommend a variety of ways to raise the necessary revenue to fund new water supply projects.

Conclusions – Additional Texas Water Development Board Analysis

The 2002 State Water Plan reports approximately 7.5 million acre-feet of water is needed to meet the needs of existing and future populations in Texas by 2050. Key water management strategies and projects recommended to meet those needs total nearly \$18 billion. The data reported in the financing surveys and the TWDB evaluations clearly demonstrate that there is a significant range of financial assistance options that could be explored. The most conservative funding scenario is based on TWDB's evaluation, which results in cash appropriations needs of approximately \$503.1 million to fund \$2.4 billion in State Water Plan projects in the next three biennia.

Although there is great variation in the specific mix of strategies and projects proposed in the 16 individual regional water plans, results of the Infrastructure Financing Survey provide some insight into where funding shortages may occur. For example, the 2002 State Water Plan identifies approximately 66 percent of new water supplies being developed through surface water sources over the next 50 years. However, based on TWDB's analysis, only five percent of the funding shortfall that occurs in the immediate future (the next three biennia) is attributable to reservoir development. Construction of transmission facilities is a much more prevalent strategy for which funding shortages may occur in the next three biennia. Approximately 27 percent of estimated capital costs in the next three biennia are associated with pipeline and conveyance facilities. Construction of these facilities will require environmental and socioeconomic issues to be addressed prior to commencement. Conservation (both municipal and agricultural) and non-traditional water management strategies (such as desalination and wastewater reuse) represent 17 percent of the estimated funding needs in the next three biennia. This too will require that the TWDB put forth some additional resources to address the needs. Finally, strategies and projects recommended for small, rural and disadvantaged communities make up only a small portion (approximately six percent) of the estimated funding shortfall in the next three biennia. However, these needs are significant because local resources are likely to be inadequate to address them.

The TWDB's analysis and the recommendations included in the 16 Regional Infrastructure Financing Reports are consistent in terms of needing to address funding needs for small, rural and disadvantaged communities. In addition, the TWDB and the Planning Groups agree that expanding the State Participation Program is important to

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meeting the needs associated with large scale, regional projects that produce significant savings to many residents of the State. To this end, TWDB's funding evaluation relies on an expansion of the State Participation Program from its currently authorized funding level of \$35 million for the 2002-2003 biennium to \$100 million for each of the next three biennia. This level of state investment could help provide the incentives for the larger, regional water supply projects to move forward. In addition, full implementation of the WIF Program will provide the necessary incentives for political subdivisions to proceed with environmental permitting activities that are necessary prior to construction of many water supply projects. The challenge for the State is to find the necessary financial resources to ensure that these goals are met.

Current TWDB financial assistance programs appear to have most of the legal authority to address proposed water management strategies. However, because of constitutional and statutory limitations, current funding sources may not be a good fit to ensure funding is provided to the respective water users. For example, bond proceeds may not be the best source of funds to address the needs of the agricultural community or disadvantaged communities, unless there is a cash source to help pay debt service. In the 16 Regional Infrastructure Financing Reports, the Planning Groups recommend a variety of ways to raise the necessary cash to allow TWDB financial assistance programs to be fully implemented so that benefits to respective water users are maximized.

It is important to recognize that not all water management strategies currently under consideration around the State were included in the 2002 State Water Plan's estimated \$18 billion capital cost. These additional water management strategies have resulted both from changed conditions and also from the absence of a recognized water user in need of additional water supply. For example, the Legislature designated the Post Reservoir project in Garza County as a unique reservoir site. While no capital cost estimate was included in any regional water plan for this reservoir project, a previously developed estimate for the project of approximately \$28.2 million has been reported. Another example is the current efforts to implement significant irrigated agriculture water conservation strategies in the Lower Rio Grande Valley. The magnitude of that effort may significantly exceed the capital costs included in the Rio Grande Regional Water Plan (Region M). In addition there is at least one brackish groundwater desalination project in Cameron County with estimated costs of \$33 million that was not included in the 2002 State Water Plan. The planning process is a dynamic process, as recognized by the fact that Senate Bill 1 required updates to both Regional and State Water Plans every five years. The examples described here are just a sampling of new water management strategies, often the result of changed conditions, which may require some level of state assistance in order to be implemented.¹⁵

¹⁵Texas Water Development Board Infrastructure Financing Report Ends here.

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Federal Funding Options

Background

Historically, there has been considerable federal investment in Texas water projects, especially in response to the “drought of record” in the 1950s. These appropriations came from the work of key Texas Congressional and state leaders, and the commitment of river authorities and various water districts to serve as local sponsors of the projects.¹⁶ Most of these projects were for the construction of major reservoirs which have provided water supply, recreation, and flood control to large areas of Texas.¹⁷

Over the past 20 years, however, federal spending on water projects has declined from about 40 percent of the total to 15 percent. Federal spending on water projects peaked in 1980 at about \$9 billion per annum. That year, federal funding on infrastructure of all types represented approximately 5 percent of the total federal budget and was the highest ever relative to the GDP.¹⁸

By 1990, however, federal spending on infrastructure had fallen to below 3 percent of the total federal budget and less than 0.6 percent of the GDP. These levels had not been seen since 1957, and federal spending had declined to about \$6 billion. This was two-thirds of what it had been a decade earlier.¹⁹

Today, federal funding for water projects has continued to decline and is down by about 70 percent in real terms from what it had been in 1980. Further, the Federal Office of Management and Budget (OMB) projects this trend will continue in the future.²⁰

These reductions in federal funding have created an unprecedented \$15 billion annual gap between capital spending plans for water projects and available funding. Not unexpectedly, state and local governments are finding it challenging to make up the difference.²¹

As federal funding decreased, state and local funding increased two-fold. At the same time, operational and maintenance costs at the local level are reaching amounts 6

¹⁶Testimony of J. Tom Ray, Lockwood, Andrews & Newman, Inc., Texas Water Advisory Council, Public Hearing, Austin, Texas, August 22, 2002.

¹⁷Id.

¹⁸Testimony of Lynn Sherman, Texas Water Development Co., Texas Water Advisory Council, August 22, 2002. (Excerpt includes entire paragraph).

¹⁹Id.

²⁰Id.

²¹Id.

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percent a year above the inflation rate. Further, state and local governments are already feeling budget strains in other areas as the federal government continues to mandate responsibility for other programs such as health care and public welfare to the states.²²

If this trend continues, the state will need to look to alternative strategies for funding water supply projects. Public/private partnerships in developing, conserving and delivering water supplies can be explored as options for filling this funding gap. Positive reasons for the state's exploration of these partnerships include: cost savings, risk management, private expertise and qualified personnel, and increased innovation.²³ On the other hand, some concerns exist around public/private partnerships including the risk of "rate-shock" associated with privatization or acquisition and upgrade of older private systems.²⁴

The state can also work to promote more Texas representation in Washington, D.C. on water supply issues by working with a strong Texas Congressional delegation and demonstrating known water supply and improvement needs. Texas currently has a strong Congressional delegation, with many senior members on strategic appropriations committees.²⁵ Through the compilation of the first grassroots State Water Plan, Texas also has a new opportunity to present Texas water needs in an informative, comprehensive format. Further, Texas has the chance to partner with other states such as California to promote funding of water projects and join forces with federal agencies which may be interested in partnerships on state water projects.

²² Testimony of Lynn Sherman, Texas Water Development Co., Texas Water Advisory Council, August 22, 2002. (Excerpt includes entire paragraph).

²³ Testimony of Lynn Sherman, Texas Water Development Co., Texas Water Advisory Council, August 22, 2002.

²⁴ Issue Paper 6: "Privatization of Water and Wastewater Services," Texas Living Waters Project (sponsored by the National Wildlife Federation, Sierra Club, Environmental Defense and Texas Center for Policy Studies.)

²⁵ Testimony of J. Tom Ray, Lockwood, Andrews & Newman, Inc., Texas Water Advisory Council, Public Hearing, Austin, Texas, August 22, 2002.

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WATER MARKETING & IMPROVING WATER CONVEYANCE SYSTEMS

WATER MARKET INDICATORS: Unlike stock or commodity exchanges or bond markets, water markets are still in their infancy. Water assets are not traded west-wide; no indicators can measure overall activity in water markets. The economic value of water depends on the reliability of the underlying water right, quantity, quality, locations, and availability of competing sources of supply and uses.

*Water Strategist: Analysis of Water Marketing, Finance, Legislation and Litigation, June 2002*²⁶

Water management that crosses political boundaries.

“Water resources heed no jurisdictional boundaries. This incontrovertible fact can produce complications in the management of trans-boundary water resources. A stream can flow across boundaries, or perhaps form the boundary between two political entities, each with differing needs, legal systems and cultures. Numerous jurisdictions may depend upon a lake for water supplies, waste disposal, transportation and food. A single aquifer system can underlie numerous jurisdictions, with its discharge areas in one jurisdiction and recharge areas in others, and abstraction all throughout the extent of its area. Even if political entities are on friendly terms, their different cultures, political systems, laws and management objectives can exacerbate efforts to achieve sustainable management of transboundary waters.

The transboundary aspects of water bodies can lead to conflict between jurisdictions, be they states, nations, provinces, municipalities, or Native Americans and First Nations. But trans-boundary water resources can also promote peace and accommodations, as jurisdictions that share a common water resource realize that cooperation is the only way to ensure resource protection and sustainability.”²⁷

Historically, in Texas, it has been necessary to move water around the state to meet the water needs of all the state’s communities. Water marketing is the subject of spirited policy debate in Texas; debate that is characterized by some seemingly unlikely

²⁶ Water Market Indicators. (June 2002). *Water Strategist: Analysis of Water Marketing, Finance, Legislation and Litigation*, p. 9.

²⁷ Integrated Trans-boundary Water Management. (2002) *Preliminary Program, July 23 - 26, 2002 Special Joint Conference of the American Society of Civil Engineers, and the Universities Council on Water Resources*, p. 2.

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stakeholder alliances.

The Joint Committee on Water Resources, at its organizational hearing on December 13, 2001, in Austin, Texas, was provided an overview of water marketing issues. This water marketing overview information is summarized below, as indicated by italic type.²⁸

The [75th] legislature discussed in SB 1 the importance of a water market with its accompanying rights in meeting the water needs of the citizens of Texas. At the same time, SB 1 attempts to protect the state from the adverse consequences, both possible and imagined, of an unregulated water to the highest price market. SB2 created this Committee to consider the many issues necessary to accomplish the state's goal of protecting and managing existing water supply and rights, while ensuring that the growing needs of the state can be met. These issues run a large spectrum, and among them is the role the state should play in the transfer of water within the state.

The existing legal and regulatory framework, far more than engineering or hydrology, determines which projects and transactions can be expected to be successfully completed. For water transactions, this legal framework shapes the agreement leading to the transfer.

There are several reasons why analysis of the water market is important. The TWDB has previously expressed the opinion that most (if not virtually all) of the state's major rivers are either fully appropriated or very nearly so. The TWDB is currently engaged in a statewide effort to quantify available groundwater. Thus, the market (or lack thereof) will play a major role in how this state's citizens and businesses meet their water needs in the future.

While there is much talk, anxiety and speculation about transfers and transactions involving water, the Texas water market is actually very limited. An active market, with ascertainable prices and predictable transfers in surface water rights exists only in the Lower Rio Grande River and, in groundwater rights, only in the Southern Edwards Aquifer. These markets, which exist in entirely different legal and regulatory frameworks, share the following fundamental features that allow an active market to exist:

- certainty in the quantity or amount being transferred;*
- certainty in the transfer process (outcome, cost and time); and*
- the ability to freely move the point of diversion or withdrawal.*

Obviously, surface water and groundwater transactions and transfers are occurring in many other areas of the state, but each of these instances is unique and tailored to the legal, regulatory and geographic conditions applicable to the source water.

²⁸ The following is a summary of testimony provided to the Joint Committee on Water Resources, by Russell Johnson, Bracewell & Patterson, at the Joint Committee's December 13, 2001 public hearing in Austin, Texas.

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The transferability of any market commodity depends upon several fundamental conditions. Each of these factors has a profound effect on the marketability of the right or commodity.

First, the right or commodity must be quantifiable, reliable and sustainable. In other words, the buyer must be able to accurately determine how much water is producible, deliverable or transferable, for how long and whether potential conditions in the future could interfere with the production or delivery of the water. Since surface water rights are easily quantified and conditions on diversion are part of the permit, this factor more profoundly affects the market in groundwater.

The second factor which substantially affects the marketability of surface or groundwater rights is the legal and regulatory framework to which transfers are subjected. In other words, what is required to complete the transfer? In surface water this regulatory framework is established by the Water Code and is administered by the Texas Commission on Environmental Quality (TCEQ). The uncertainty, time and cost of completing this process makes every proposed transfer requiring an amendment unique, increasing cost and uncertainty. In contrast, the regulatory framework for groundwater transfers depends upon the existence, powers and rules of a groundwater district. Among the many major accomplishments of SB 2 are the amendments to Chapter 36, which describe and limit the powers of groundwater districts to limit, restrict or regulate transfers of groundwater for use outside the district. Transactions in groundwater in areas of the state not covered by a groundwater district are necessarily tied to the real property from which the water will be produced, with all the uncertainties inherent in an unquantifiable, unprotectable right. Given the capital cost associated with developing the transmission facilities, most of these transactions will likely involve large acreage.

Third, a major impediment to the water market in Texas is the complete absence of conveyance or transmission facilities or mechanisms. Unlike electricity, natural gas and other commodities, no system exists for moving water from where it is to where it may be needed.

Fourth, regulation, restrictions and limits on transfers of surface and groundwater based on purpose or place of use are a major obstacle to reaching market solutions to water resource needs. Regulation of withdrawals and transfers of surface water should be based upon protection of the river, its dependent ecosystems and the historic rights reflected in permits issued by the TCEQ. However, disputes over the purpose and place of use inevitably generate conflict between geographic areas and/or economic interests. The same is true with regard to groundwater.

Perhaps most importantly, legal and regulatory policy applicable to transfers of water should be based upon objective goals which are balanced and are based upon well-established legal and market principals. Markets themselves are neither inherently good or evil, but policies and principals which protect historic or vested interests while

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facilitating an active market will benefit the state and all of its citizens.

Surface Water Market Framework

Transfers of real property involving the simultaneous assignment of the “right” to divert and use surface water for the real property are common and easily completed. While these transactions involve surface water, they are largely unencumbered with any significant regulatory obstacle to completing the transaction. Certainty in completing the transaction removes any significant risk that the regulatory framework will prevent, delay, increase the cost, affect the reliability or otherwise frustrate the transaction. The new owner of the real property can count on acquiring the permit rights of the previous owner.

Texas law provides that any transfer of a water right which changes any one of four cardinal permit conditions (place of use, purpose of use, diversion point or amount) requires the approval of the TCEQ. The transfer process involves filing an application with the TCEQ which contains sufficient information for the TCEQ to analyze the proposed transaction and give notice to all potentially affected interests (including other permit holders, the Texas Parks and Wildlife Department and various non-permitted right interests). If any party with valid standing protests the proposal, a contested case hearing is required with the consequent expense, time and uncertainty. For these reasons, transfers involving changes in these four permit conditions are not routine and the “market” is not well-defined or consistent.

With the exception of transfers in the Lower Rio Grande Valley, the value of water in the river basins of Texas is affected by so many variables that no range of values can be assigned.

The passage of SB 1 in 1997 represented the first step in reducing some of the substantial regulatory impediments to proposed in-basin transfers, while making out-of-basin transfers more difficult.

Groundwater Market Framework

The Texas courts have, under the rule of capture, consistently and historically declined to regulate transfers of groundwater or protect historic users from the consequences of unlimited groundwater production. The Supreme Court has consistently deferred to the legislature to address groundwater management and regulation.

Since the adoption of the rule of capture in 1904, the market in groundwater in Texas has consisted of two types of transactions:

- acquisition of real property with the expectation of producing groundwater, or*
- sales by landowners of water produced from their property.*

Unfortunately, the very same factors that facilitated these transactions substantially diminished the value of the water. The value of water in such a sale was limited by the ability of the buyer to instead acquire adjacent property and avoid a “water” cost. The

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value of the groundwater right bundled with the real property is likewise diminished by the inability to “protect” the production.

SB 2 [77th Session] attempts to accomplish seemingly contradictory goals: creating and empowering groundwater districts to manage and protect the state’s groundwater resources while respecting the rule of capture rights of landowners.

SB 2 deals directly with the power of groundwater districts to regulate groundwater production [and] addresses the delicate interplay between protecting existing use by regulation and allowing the exercise of the ownership right by landowners proposing new or increased use. Groundwater districts may impose more restrictive conditions on new applicants if they are willing to impose those conditions on all new users and existing users proposing to increase their historic use. By necessity, decisions concerning the fairness of such limitations will be made which will consider the needs of all the users and landowners within the district.

Perhaps the most fundamental changes contained in SB 2 are amendments to Section 36.122 of the Texas Water Code. This section addresses the authority of groundwater districts to regulate transfers of groundwater out of the district. These provisions, for the first time, establish the framework within which proposed water transfers may be objectively analyzed. Stated another way, SB 2 makes it clear that it is not the district’s responsibility to determine the appropriate location of use of groundwater produced within the district.

Market Value Issues

The burning question on everyone’s mind is: What is (my) water worth? While it seems a simple question, the answer depends on so many variables that it cannot be answered without a frame of reference. Examination of other areas of the country where a water market has historically operated provides little guidance in valuing water resources in Texas.

There are a myriad of ways of valuing water and treatises have been written on preferred models for determining how water as a commodity should be valued. Obviously, one can look at the economic benefit derived from the specific use or uses of the water, and place a value on the water based upon the net benefit to the user. This creates a wide disparity in the value of water used for commercial or industrial purposes vs. domestic or agricultural uses. Indeed, this wide disparity raises concern among agricultural and rural interests, given the inevitable economics of commodities moving to the highest willing buyer price; substantially more in the case of industry or water purveyor use versus agricultural use. Given that more than 50% of the state’s water use is devoted to agriculture, the lure of the value of water is viewed as a threat to current agricultural use.

Current Texas law prevents any kind of statewide analysis of the unit value of water. For instance, permits to withdraw water from the Lower Rio Grande have been

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transferred throughout the Lower Rio Grande Valley for the last thirty years, and prices are reasonably well-defined. Similarly, a market has emerged in transferred Edwards Aquifer permit rights which have been leased and purchased for the last several years. Lease prices range from \$70 to \$80 per acre foot per year, while permanent acquisitions or transfers have been accomplished from \$700 to \$1,500 an acre foot. Cities in the Panhandle and West Texas have either purchased real estate or acquired the right to produce water from real property by payment of some unit price to the landowner. These prices have varied from very low numbers (\$7 per acre foot) to numbers reportedly approaching \$100 per acre foot.

Many variables affect the value of groundwater “owned” by the surface landowner. Obviously, the location of the land in relation to a potential demand or buyer plays a substantial role in the value of the water. The capital cost of facilities necessary to extract and deliver the water and the operating costs of the those facilities also play a substantial role. The quality of the water and the need to treat the raw water likewise substantially affects its value. Nature and the extent of treatment required can radically alter the value of a water resource to a potential buyer. Sustainability of production is a factor in determining the value of a groundwater resource. Numerous other factors affect value, including the existence of a groundwater district and the nature of rules regulating production, historical vs. projected use, impact on the resource and sustainability of the production. Value of water will necessarily require a careful analysis of each situation considering all of these variables.

The value of water is directly related to the sustainability of the water supply, the cost of moving the water to the location of use, the quality of the water and the regulatory impediments to completing the transaction and delivering the water. For these reasons, water in a river or in the ground is less valuable than water in a pipeline available for delivery. Water requiring extensive treatment is clearly less valuable than water that is of potable water quality. Water can be incredibly pure and easily accessible, but if it is not sustainable over a substantial period of time, the capital cost to obtain the water may prohibit a transaction.

Finally, uncertainty in terms of the regulatory environment has a negative influence on the value of water. In the limited instances where an active market has occurred in water in Texas (the Lower Rio Grande Valley and the Edwards Aquifer) a combination of hydrologic facts and a clean and clear regulatory environment facilitate the development of a market in the transfer of rights from one user to another. These markets are particularly facilitated by the ability to move the diversion point for the water right permit with predictable consequences. In most other water resources in the state, it will be difficult to develop new diversion points. Therefore, the ability to transport the water from the place of production or diversion will be critical.

It is reasonable to assume that there will be a renewed focus on development of groundwater resources. We are beginning to see the development of landmen securing leases and promising landowners royalty payments when deals are struck. Real estate

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transactions are occurring that have more to do with water than with surface estate. Landowners' ability to participate in the market will be highly variable depending upon numerous factors, including whether the water has been produced by the landowner historically, the size of the area, the productivity of the resource, and proximity to demand.

Transactions and projects will help alleviate future demands. [However], the water market in Texas groundwater and surface water rights is severely constrained by institutional limitations and regulatory requirements which must be overcome before water can be transferred from one user to another.

Despite these limitations, a water market is emerging in the State of Texas. Creativity will dictate the success of surface water markets in accomplishing win-win situations for the various regions involved. Groundwater transactions can be anticipated to increase in frequency and scope and will generate additional debate concerning the need for or scope of governmental regulation.

SB 2 represents a substantial milestone in accomplishing the state's purpose in protecting the groundwater resources of the state while respecting landowners' property rights historically acknowledged to be associated with ownership of real property. Districts are empowered to regulate and manage, but must do so with the primary focus on protecting the resource. The ability of districts to regulate type and location of use is limited.

The next phase in the development of this area of the law will be the adoption of rules and exercise of these new powers by the 90+ groundwater districts which now exist in Texas. Each of these districts has all of the new powers granted groundwater districts and all of the groundwater districts have substantially broader powers in regulating groundwater production. If used wisely, these powers can be sufficient to protect groundwater resources for decades to come. If used unwisely, they will lead to litigation and uncertainty.²⁹

The Joint Committee on Water Resources focused on water marketing and water conveyance at its April 23rd public hearing in Amarillo, Texas. Testimony included overviews of Texas-specific issues and challenges, as well as specific recommendations to resolve some of these challenges and improve Texas' water marketing and conveyance systems.

In the area of water marketing, the following suggestion was one of many brought to the joint committee's attention:

Develop and implement mechanisms to benefit exporting communities

²⁹ Testimony by Russell Johnson, with Bracewell & Patterson, to the Texas Joint Committee on Water Resources, December 13, 2001 public hearing in Austin, Texas.

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- Water exporters could contribute fees and/or revenues to local Economic Development Corporations (EDCs) and/or county governments, for economic development projects to benefit the communities of origin.
- Allow these funds to also be used for general operating expenses, in order to reduce the need for tax-based revenues.³⁰

³⁰Sherman, Lynn. *Presentation to the Texas Joint Committee on Water Resources*, April 23, 2002, Amarillo, Texas.

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ENVIRONMENTAL & INSTREAM FLOWS

Background

Texas is blessed with an abundance of water in the form of springs, streams, rivers, estuaries, and other aquatic resources. This includes over 191,000 miles of rivers and streams that create a network that supports numerous species of aquatic organisms. Like veins and arteries that flow through the human body, these aquatic systems provide life-giving nutrients and oxygen to plants and animals and also provide many benefits to man. These streams bisect the landscape and replenish wetlands, bottomlands and eventually provide freshwater to our bays and estuaries. They also support municipalities, industries, and provide countless recreational opportunities including boating, paddlesports, hunting, fishing, birdwatching, and many important non-consumptive uses. The importance of water in rivers and streams is often not fully understood, and, in some cases, this lack of knowledge leads to bigger problems when man changes its free-flowing nature.³¹

When surface water is diverted or stored upstream, it is recognized that an environmental effect will be noticed downstream. In relation to the state's bays and estuaries, this effect can be dramatic and impact both the economic and ecological viability of the area.

Surface Water Permitting in Texas

In Texas, rivers, streams and all surface water is owned by the state and distributed through an appropriations process. Statutory authority for this process is granted to the Texas Commission on Environmental Quality (TCEQ)³² in Texas Water Code §11.022, which states that:

“The right to the use of state water may be acquired by appropriation in the manner and for the purposes provided in this chapter. When the right to use state water is lawfully acquired, it may be taken or diverted from its natural channel.”³³

Water permits in Texas are issued in order of their application or using a first-in-time, first-in-right appropriations doctrine. In other words, all new permits are issued based on what has already been appropriated in the past. The term “over appropriated” is also

³¹The Interim Committee on Water Resources Development and Management Interim Report to the 76th Legislature: Implementation of Senate Bill 1, January 1999.

³²Formerly the Texas Natural Resource Conservation Commission (TNRCC).

³³Tex. Water Code Ann. § 11.022 (Vernon 2000).

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often used in describing the issuance of surface water permits in Texas. This term simply means more permits have been issued on paper than water that exists in the river or stream. During times of drought or low-water levels, the permits granted at an earlier date will be given the water allocated in the appropriation before the later permit. Hence, the earlier permit has seniority over the later one.

Texas water law also only allows the appropriation of water for certain uses. Specifically, Texas Water Code §11.023, provides that water may be appropriated, stored, or diverted for: domestic and municipal uses; agricultural and industrial uses; mining; hydroelectric power; navigation; recreation and pleasure; public parks; game preserves; and any other beneficial use.³⁴

Preferences are given under the water permitting system to domestic uses, followed respectively by municipal, agricultural and industrial.³⁵ Users in this category apply for a permit through the TCEQ where it is generally reviewed simultaneously for technical impact and administrative completeness. After this process is complete, notice of the permit is posted and the agency takes public comment on it. The TCEQ can issue permits for varying time periods including: in perpetuity, for life terms, and for temporary uses.³⁶

Exemptions

Exemptions to the prior appropriation doctrine exist in several areas of the state and under certain circumstances. For example, water in the Rio Grande Valley is appropriated under a purpose of use doctrine where uses such as municipal take precedence over uses such as agricultural. Further, exemptions exist for livestock and domestic users under Texas Water Code §11.142³⁷ and certain exemptions apply to users that live near a river or watercourse. Finally, under certain conditions, exemptions are also granted for emergencies.

Environmental Flows

The amount of water needed in rivers, streams, and coastal bays to support fish and wildlife populations is commonly referred to as “environmental flows.”³⁸ For example, it

³⁴Tex. Water Code Ann. § 11.023 (Vernon Supp. 2002).

³⁵Testimony of Jeff Saitas, Executive Director, Texas Commission on Environmental Quality, Public Hearing of the Joint Committee on Water Resources, Austin, Texas, December 13, 2001.

³⁶*Id.*

³⁷Tex. Water Code Ann. § 11.142 (Vernon's Supp. 2002).

³⁸“Issue Paper 1: Environmental Flow Protection-A Question of Texas Heritage,” Texas Living Waters Project (sponsored by the National Wildlife Federation, Sierra Club, Environmental Defense and Texas Center for Policy Studies).

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is generally accepted that a certain amount of fresh water inflow is needed to support healthy bays and estuaries. If too much fresh water is diverted upstream and prevented from reaching the bays, an impact will be apparent on the fish and wildlife populations in the coastal areas.

Environmental flows are also a consideration in inland rivers and streams across the state. The water needed to support fresh water ecosystems that are not bays and estuaries is generally referred to as being an instream flow.

The importance of maintaining sufficient instream flows in 15 major rivers and freshwater inflows to the seven major estuaries along the coast is needed to support the best inland and coastal fisheries in the nation.³⁹ Protecting, maintaining, and, sometimes, restoring these flows is important to segments of the Texas economy, particularly in rural areas.⁴⁰ Flowing streams and productive estuaries generate income from commercial and sport fishing, hunting, and tourism. They also reduce erosion in bays and provide nutrients to fish and wildlife that live in these ecosystems.⁴¹ Other benefits to water quality occur from the assimilation of huge volumes of wastewater discharges and other pollution.⁴² In fact, when the TCEQ issues new water rights permits or amends old permits, the agency considers the ratio of wastewater discharges to amount of flow in the stream or river.

The amount of water needed for instream flow varies greatly depending on the region of the state. The difference in amount of rainfall and wildlife make the need for instream fresh water vary tremendously. For example, many of the rivers in East Texas have ample water to be appropriated and adequate instream flows are being more easily maintained. However, in North and Central Texas, most of the water is over appropriated at the current time leaving little room for more environmental flows.

In addition to various needs, the wildlife and habitat that depend on environmental flows depend on varying amounts at different times of the year. These seasonal variations are part of a natural ecological occurrence, but they present further issues when water permits are being designed to minimize the effects on the environment.

Environmental Flows and Water Permitting

³⁹The Interim Committee on Water Resources Development and Management Interim Report to the 76th Legislature: Implementation of Senate Bill 1, January 1999.

⁴⁰“Issue Paper 1: Environmental Flow Protection-A Question of Texas Heritage,” Texas Living Waters Project (sponsored by the National Wildlife Federation, Sierra Club, Environmental Defense and Texas Center for Policy Studies).

⁴¹Id.

⁴²The Interim Committee on Water Resources Development and Management Interim Report to the 76th Legislature: Implementation of Senate Bill 1, January 1999.

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Texas began considering appropriating water under a management system before the turn of the century in legislation concerning the management of surface water in 1889 and 1895.⁴³ Texas began issuing permits in 1914, and 60 years of permitting ensued without consideration for environmental flows. During this period, much of the available surface water in Texas was appropriated. Today, permits continue to be issued and many of the rivers and streams in Texas are over appropriated (meaning more water rights exist on paper than are available in the river or stream).⁴⁴

In 1975, legislation requiring the state to consider impacts on the Texas bays and estuaries was implemented, and the state also began data collection on these parts of the ecosystem. However, the biggest change concerning environmental flows and permitting occurred in 1985. In 1985, a change in state law required the TCEQ to consider the impacts to environmental flows on a case-by-case basis when it issues *new* water rights permits and for some types of permit amendments.⁴⁵ If it chooses, the TCEQ may impose conditions on new water rights in consideration of environmental flows. Generally, examples of conditions imposed in the past include: release schedules of water from reservoirs and diversions conditioned on the amount of flows in the river at a given time. A specific example includes: a permit issued in 1976 to the City of Corpus Christi and the Nueces River Authority for a reservoir contingent on a certain amount of water being provided to the bays and estuaries through spillways and timed releases.

In considering whether a condition should be attached to a permit amendment, the TCEQ applies the “no injury” rule as set out in Texas Water Code §11.122(b). The code states that an amendment shall be authorized (unless it increases the amount of water or rate of diversion) if the change “will not cause adverse impact on other water right holders or the environment on the stream of greater magnitude” than the permit which was already in use. The key issues arise concerning ways in which the adverse impact should be determined. Some interest groups support the current “four corners” test in Texas Water Code §11.122(b), while others would require public discussion concerning the adverse impacts in each case.

Reviewing specific conditions to provide for environmental flows in new and amended permits is a key component to the protection of the state’s bays, estuaries, rivers and streams. However, the downside to this approach is that the burden for protecting the state’s fish and wildlife populations may fall disproportionately on new permit holders. In addition, the system does not provide for correcting problems on over appropriated

⁴³Testimony of Dean Robbins, Texas Water Conservation Association, Public Hearing Joint Committee on Water Resources, Austin, Texas, December 13, 2001.

⁴⁴*Id.*

⁴⁵“Issue Paper 1: Environmental Flow Protection-A Question of Texas Heritage,” Texas Living Waters Project (sponsored by the National Wildlife Federation, Sierra Club, Environmental Defense and Texas Center for Policy Studies).

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rivers and streams since new permits are unlikely to be issued under these conditions.

San Marcos River Foundation Permit Application

In 2001, the San Marcos River Foundation (SMRF), a private environmental organization, made an application to the TCEQ for 1.3 million acre feet of water per year to be used exclusively to provide for environmental flows in the Guadalupe River. The TCEQ determined that the organization was entitled to submit the application and would review it under its current rules. The determination to allow submission of this application was made from language in Texas Water Code §11.023 which lists “any other beneficial use” as one of the uses for which water may be appropriated. Further, certain TCEQ rules also state that instream flows are a beneficial use. Currently, the TCEQ has issued a draft permit for this application, and the permit is open for public comment through October 23, 2002.

Historically, the TCEQ has not issued permits for the purpose of environmental flows. Instead, application for a water right has been made when water is needed for conversion to an active use such as storing or diverting water. In other words, permits have been issued for the taking and use of a water right for a specific purpose such as generating hydroelectric power or irrigating farmland. Issuing a permit for leaving or reserving water in the stream or river is a different principle. Effectively, the TCEQ would be issuing a permit for the “non-use” of water. Concededly, the statutory framework of Texas Water Code, Section 11.023 does provide that water permits can be issued for “any beneficial use;” however, it does not provide that a water right can be issued for a beneficial non-use or a reservation of water.

The SMRF application is requesting water for a permit that will not be put to a use; instead, it will be left in the river and stream for environmental purposes. Most importantly, if issued, the TCEQ will have to consider the SMRF permit in issuing any new water rights in that basin in the future. However, the SMRF permit would not impact current water rights held in that basin as it would be junior to those rights since it would be issued later in time.

Testimony before the Joint Committee on Water Resources also indicated that the SMRF does not intend to hold this water right in their name if it is granted. Instead, the foundation intends to donate the right to the Texas Water Trust.⁴⁶

Texas Water Trust⁴⁷

⁴⁶Testimony of Myron Hess, Texas Wildlife Federation, Public Hearing Joint Committee on Water Resources, Austin, Texas, December 13, 2001.

⁴⁷The Interim Committee on Water Resources Development and Management Interim Report to the 76th Legislature: Implementation of Senate Bill 1, January 1999.

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Senate Bill 1, 75th Texas Legislature created another mechanism to advance fish and wildlife conservation. This legislation created a mechanism for reserving water rights for environmental use in the Texas Water Trust (Trust).

One intent of the Trust was to provide a way to permanently retire some water rights so that attempts could be made to dedicate water for environmental purposes, especially in fully allocated streams. The Trust would allow a way for those rights to be set aside so that environmental stakeholders would have confidence that water would be in the stream or river segment for environmental needs.⁴⁸

The Texas Water Code describes the Texas Water Trust as follows:

- (a) The Texas Water Trust is established within the water bank to hold water rights dedicated to environmental needs, including instream flows, water quality, fish and wildlife habitat, or bay and estuary inflows.
- (b) The [Water Development] board in consultation with the Parks and Wildlife Department and the [Commission on Environmental Quality] commission, shall adopt rules governing the process for holding and transferring water rights.
- (c) The dedication of any water rights placed in trust must be reviewed and approved by the commission, in consultation with the board and the Parks and Wildlife Department.
- (d) Water rights may be held in the trust for a term specified by contractual agreement or in perpetuity.⁴⁹

Water rights may be deposited for a time-limited term or in-perpetuity into the Trust and are not subject to cancellation for the period of deposit.⁵⁰ Administratively, the Trust is a part of the Texas Water Bank, which is also administered by the Texas Water Development Board (TWDB). Revised Water Bank rules⁵¹ were adopted in January 1998 covering the Board's operation of the Trust.⁵²

⁴⁸ The Interim Committee on Water Resources Development and Management Interim Report to the 76th Legislature: Implementation of Senate Bill 1, January 1999.

⁴⁹ Tex. Water Code Ann. § 15.7031 (Vernon 2000).

⁵⁰ Texas Water Development Board Presentation to the Joint Committee on Water Resources, Public Hearing, February 27, 2002.

⁵¹ Texas Water Development Board Rule 359.

⁵² Texas Water Development Board Presentation to the Joint Committee on Water Resources, Austin, Texas, Feb. 27, 2002.

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The Texas Parks and Wildlife Department (TPWD) is charged with identifying and prioritizing water bodies where instream flows are in need of protection. The agency is also charged with acting as an advocate for use of the Trust in order to secure environmental flows.⁵³ The TPWD has also been a leader in efforts to develop an interagency workgroup to establish operating procedures for the various agencies concerning the Trust.⁵⁴

The TCEQ has the authority to approve all water rights amendments and deposits to the Trust. The TCEQ has indicated that it will not waive fees for the Trust deposits, unless the depositor signs an agreement with the TPWD granting that agency the authority to make water rights calls while on deposit in the Trust. Fees are also waived by statute if the depositor contracts with or dedicates the water rights to the Trust in the name of the TWDB.⁵⁵

The Texas Department of Agriculture (TDA) also actively monitors the activities of the Trust and provides input to the other agencies.

Since its creation in 1997 through SB1, the Trust has not been utilized as a mechanism for preserving water rights for environmental purposes. A water right was offered by the TPWD (2000) for deposit into the Trust to provide an early test of the procedures established by the various agencies, but the permit application has been withdrawn at this time.

One primary barrier to the effective usage of the Trust is the willingness of water rights holders to donate valuable rights. Even if the water right is not in use, most water rights holders recognize the monetary value of this resource and purchasing water rights for donation can be an expensive option.

Cancellation

Texas Water Code §11.338 provides for the lawful cancellation of water rights in Texas. The TCEQ currently has the authority to cancel water rights under certain conditions, such as abandonment. In these circumstances, water rights could be cancelled and dedicated to the Texas Water Trust to be held for environmental purposes. However, the burden on the state to prove that a water right is not being used is high, and, it is safe to conclude, that the water rights cancellation process is not a current viable mechanism to use for the enforcement of water rights permits.

⁵³ Texas Water Development Board Presentation to the Joint Committee on Water Resources, Austin, Texas, Feb. 27, 2002.

⁵⁴Id.

⁵⁵Id.

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Enforcement

“Quite frankly, it is becoming a little difficult at times to administer the water laws of this state.”

Comment by Jeff Saitas in his capacity as Executive Director of the TCEQ urging the committee to statutorily address critical water policy and enforcement issues.⁵⁶

The authority for enforcement of surface water rights in Texas is with the TCEQ. Due to resource and funding constraints, the primary tool used for enforcement is the “honor system.” Water rights holders are expected to comply with the terms of their permit and not withdraw more water than they have been appropriated. The agency will investigate complaints regarding the misuse of water permits.

In times of adequate rainfall, this system is fairly effective and the agency does not receive a large number of complaints concerning abuse of water permits. However, Texas is frequently under drought conditions, and the honor system becomes significantly less effective during these critical periods. The most difficult obstacle in investigating water rights violations is determining how much water a user is actually withdrawing at a given time. Water meters are not widely used in Texas, and it becomes impossible to establish whether a user is in violation.

Another prevalent surface water enforcement issue concerns the unlawful diversion of water by users that live along rivers, streams, and tributaries. For the most part, the state lacks adequate resources to patrol miles of Texas rivers in search of violators. Some river authorities operate enforcement programs for illegal diversions such as helicopter patrols and monitoring systems. However, these programs are not consistent statewide and do not begin to address this issue in a comprehensive way.

Texas Watermaster Program⁵⁷

In some areas of the state, the TCEQ operates watermaster programs. The TCEQ's watermaster programs ensure compliance with water rights by monitoring stream flows, reservoir levels, and water use. They also coordinate diversions in the basins which are managed by their programs. The watermaster regulates reservoirs as needed to prevent the wasting of water or its being used in quantities beyond a user's right. Before diverting, a water right holder must notify the watermaster of the intent to divert at a specific time and the specific amount of water to be diverted. Assuming that the water is available and that the water right holder has not, or will not, exceed the annual

⁵⁶Testimony of Jeff Saitas, Executive Director, Texas Commission on Environmental Quality, Joint Committee on Water Resources Public Hearing, Austin, Texas, December 13, 2001.

⁵⁷Texas Commission on Environmental Quality website: See <http://www.tnrcc.state.tx.us/enforcement/fod/wmaster/wmaster1.html#how>

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authorized appropriation of water, the watermaster then authorizes the diversion and records this against the right. The two watermaster programs include staff "deputies" who daily, weekly, or monthly make field inspection of authorized diversions to insure compliance with the water right (e.g., that the diversion rate is not exceeded).

If a water right holder does not comply with his water right or the rules of the TCEQ, the executive director may direct the watermaster to adjust the control works to prevent the owner from diverting, taking, storing, or distributing water until he complies. As provided by the Texas Water Code, the TCEQ collects fees from all water right holders within the watermaster's jurisdiction in order to pay for the expenses of the watermaster's operations and duties. An account is maintained for each water right owner based on each type of authorized use under the water right. The total assessment per account is comprised of two fees: a base fee charged on each account and a use fee charged on the total number of acre-feet of water the owner is authorized to divert per annum for each authorized use. The current base fee is \$50.00 per account and generally does not change from year to year. The use fee rate is calculated each year and is based on the proposed operating budget for each watermaster program.

Watermaster programs are created through the authority created in Texas Water Code §11.325. Under this section, water divisions may be created from time to time as the need arises. The role of the water divisions is to provide protection to the holders of water rights and economical supervision to the state. The executive director of the TCEQ may appoint a watermaster to an established water division. The TCEQ may also authorize the executive director to appoint a watermaster upon receipt of a petition of 25 or more holders of water rights in a river basin or segment of a river basin. This requires a hearing before the TCEQ where persons may present testimony and evidence either in support of or against the petition.

Water Availability Modeling⁵⁸

The TCEQ is required by the Texas Water Code §11.134(b)(2) to only grant an application for a new or increased appropriation if there is sufficient unappropriated water available in the source of supply. Available unappropriated water is the amount of water remaining in a water course or other source of supply after taking into account all existing water rights of record. Since, as a matter of hydrology, the amount of water available varies over time and also varies by location on the watercourse, this computation is complex.

To perform the required analysis, staff utilizes computerized Water Availability Models (WAMs). At the present time WAMs have been developed for 22 river basins in Texas. A water supply model is under development for the Rio Grande that will be completed by December 31, 2003.

⁵⁸Texas Commission on Environmental Quality website. See:
<http://www.tnrcc.state.tx.us/permitting/waterperm/wrpa/wam.html>

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The objective of the WAMs is to create fully documented reservoir and river basin models for all river basins within Texas. The models are used and maintained for each basin to facilitate the evaluation of existing permits, approval of permit applications, and development or review of overall management plans. For permitting, the principal results from the water availability analyses are the reliability of existing water rights and monthly estimates of unappropriated water that would be available for diversion or storage.

There are several components to the WAMs. These components include: naturalized streamflows, geographical information system (GIS) grid coverages and GIS tools for spatial analysis of the stream networks, the Water Rights Analysis Package, and a database.

Naturalized streamflows are the flows that would have occurred in the absence of human activities such as reservoir development, diversions, and return flows. Naturalized flows are used so that historical diversions, impoundments, and returns do not affect the water availability analysis. Naturalized flows at primary control points are based on historical hydrologic records, adjusted to remove the impact of human activities. The flows are used as input to the water availability model, which simulates the operation of existing water rights considering their location, characteristics, and priority under Texas water law. Naturalized streamflows were developed for selected control points for each month over the historical period of record. The locations where naturalized streamflows were developed are called primary control points, and basically describe the spatial configuration of the river basin.

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RIVERBED PROTECTION

Introduction

In SB 2 , 77th Texas Legislature, the Joint Committee on Water Resources was charged with studying the protection of the natural condition of beds and banks of the state-owned watercourses. This controversial issue was debated during the 77th legislative session. A satisfactory consensus could not be reached on the issue, and members of the House and Senate Committees on Natural Resources agreed it should be studied further in the interim through the joint committee.

The joint committee took testimony on this issue in a public hearing on February 27, 2002. A great deal of public testimony was taken, and several controversial issues were again raised.

Following the session in August 2001, the Texas Parks and Wildlife Department (TPWD) also heard testimony concerning the issue. After further staff investigation, TPWD initiated a “Motor Vehicles in Navigable Streambeds Task Force” (4x4 Task Force) made up of stakeholders representing a broad range of viewpoints. The 4x4 Task Force also met during the interim and had the unique ability to review the issue in great detail through a stakeholder process.

The 4x4 Task Force issued a report to the TPWD which is partially reproduced for convenience on the following pages. This report has not been written by the members of the Joint Committee on Water Resources or by any staff of the Texas House of Representatives or the Texas Senate connected to the joint committee.

For a complete copy of the report, please visit the Texas Parks and Wildlife Department website at: www.tpwd.state.tx.us/texaswater/rivers/taskforcereportindex.htm or contact the TPWD at: 4200 Smith Road, Austin, Texas 78744. Phone: (800) 792-1112.⁵⁹

A Report to the Texas Parks and Wildlife Commission on the Use of Motorized Vehicles in Navigable Streambeds⁶⁰

Background

⁵⁹The reproduction of the report begins here and concludes at the end of this section.

⁶⁰“A Report to the Texas Parks and Wildlife Commission on the Use of Motorized Vehicles in Navigable Streambeds,” Texas Parks and Wildlife MV in Navigable Streambeds Stakeholder Task Force, Austin, Texas, May2002. Edited.

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Although the specter of motorized vehicle use in Texas streambeds seems to have recently arisen, the evolution of this recreational form has taken place over a much longer period. Without question, motorized vehicle use in Texas rivers and streams has both a long cultural and agricultural history. Sepia-toned pictures of Model-T Fords sitting astride a small stream abound in tattered family albums, and the sight of pickup trucks hauling feed across a shallow ford is a common fixture of Texas agriculture. However, motorized vehicle operation in streambeds began to loom large in the rearview mirror of landowners and environmental organizations when organized “4X4” events became popular activities and destinations on the recreational landscape of Texas.

For the purposes of this report two terms require definition. The term MV (motorized vehicle) will be used inclusively for all forms of wheeled or tracked motorized vehicles (all-terrain vehicles, motorcycles, 4X4, etc.).

The term “streambeds” refers to that part of the bed and bank of navigable waters lying below the gradient boundary. Tidewater limits refers to the upper or inland limits at which the tide reaches in a particular stream, creek, or river. In navigable waters above tidewater limits, the public has a right of access, as long as they do not trespass on private property to gain access, and use of the bed and banks (as well as the water) even though the bed may be in some cases privately owned.

The frequency and magnitude of MV rallies taking place in Texas streambeds have grown throughout the last decade. The cumulative concerns of citizens regarding that practice were expressed in a bill introduced in the 77th Texas Legislature that could have resulted in a ban on MV use in streambeds. Although the bill failed, the Joint Interim Committee on Water Resources was charged with studying protection of streambeds. The House Recreational Resources Committee has also received an interim charge to study MV use in streambeds.

At its annual public hearing in August 2001 the Parks and Wildlife Commission heard testimony from a stream of landowners (40+) whose properties adjoined the Nueces or Llano rivers. As a result of that testimony and subsequent staff investigations regarding the basis of those concerns, the Commission Chair formed the “The MV in Navigable Streambeds Task Force” (Task Force) to provide a broad and balanced perspective. Task Force members were selected to represent identifiable stakeholder groups including State Agencies (GLO, TNRCC, TDA), River Authorities (Nueces, LCRA, GBRA), Landowners, Local River Users, Recreational Vehicle Enthusiasts, and Environmental Groups. To focus the scope of the Task Force, the Commission provided a clear charge to its members:

“The objective of the Task Force is to bring together a broad spectrum of stakeholders to provide perspective to the Texas Parks & Wildlife Department and Commission regarding the issue of motorized vehicles in navigable streambeds.”

When does “use” become “abuse?”

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The delineation of “use” and “abuse” is subjective and largely a matter of degree. For example, does one MV in a streambed represent “use” and a hundred MV in the same streambed “abuse?” The subjective nature of this question may well render quantification difficult and begs a consensus answer that perhaps is a negotiated calculus.

Much of the discussion related to “use” and “abuse” hinges on the notion of “traditional use” of streambeds in Texas. Task Force members were split on this issue, some finding residence at each extreme of the question and some in between. Again, this question is clearly a matter of degree. Some members suggested that any MV use in a stream is not a traditional use while others point out that MV have been used for recreational and agricultural purposes for decades.

Legal Access

Because so much of Texas is private property, legal access may be limited in areas and confusion about access and trespass rights and restrictions is commonplace. The current legal means of defining public and private property boundaries (gradient boundary) of navigable waters is problematic and its complexity contributes to access conflicts. The hazy definition of public water in Texas streambeds and the lack of an easily defined border between public and private holdings almost ensure these conflicts will increase in the future.

All stakeholders support the use of and access to public streambeds for recreational activity. The question is concisely one of means. Landowners and other stakeholders assert that their issue is focused on MV, not boats, canoes, kayaks and pedestrian means of access. They reiterate that they support the latter as appropriate uses and MV as inappropriate. Conversely, MV enthusiasts argue that these MV cause little or no damage when operated responsibly and, with good judgement, trespass issues can largely be avoided.

Although landowners recognize that not all MV operators contribute to trespassing, they report a dramatic increase in trespass incidents as the numbers of MV in streambeds have increased. Landowners and other stakeholders are also concerned about resource impacts, poaching, inappropriate public behaviors, hunting safety issues and the use of drugs and alcohol on all public streambeds, not just adjacent to their property. Of particular concern to private landowners are the organized rallies that have occurred. Organized MV groups point out that these areas are public property in a state where public lands are limited, especially in contrast to other western states.

Local residents have access concerns, but tend to be more focused on use of MV in streambeds as a means of reaching a destination (picnic area, swimming hole, etc.) rather than a recreational activity in itself. Local streambed users point out historic use of the MV in a streambed as a means to reach swimming and fishing areas. These activities represent a significant and important recreational access strategy for local residents. Some members felt that claims of resource damage are a pretext for denial

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of access to the public.

Resource Impacts

Definitive studies to determine the effects of MV activity on riparian habitats in Texas are incomplete. The issue simply has not been on the scientific radar screen in Texas for a sufficient period to allow—or demand—investigations of the depth and breadth necessary to ascertain any measurable cause and effect relationships between MV and environmental or biological degradation. Nonetheless, TPWD staff experts in wildlife, fisheries and stream ecology have completed preliminary evaluations and agree that MV activity does cause ecological damage. The extent of that damage and its contribution to degradation of rivers and streams relative to other perturbations be they natural or man-made, is not known. There is simply insufficient Texas-specific information at this time. The Task Force, then, was left to consider results of studies from other states.

National MV organizations have expressed concerns about the use of MV in streambeds and have developed guidance documents to help their members avoid resource impacts. Organized Texas MV groups represented on the Task Force reported their organizational adherence to “Tread Lightly” principles. However, these claims are not supported by empirical data. MV use in streambeds is occurring despite the specific direction of “Tread Lightly” principles to “*Avoid streams, lakeshores, meadows, muddy roads and trails, steep hillsides, and wildlife and livestock.*” The Honda Motor Company “Tread Lightly” guidelines state: “*Traveling in a stream channel causes damage to aquatic life*”. Other provisions of the “Tread Lightly” pledge and principles state, “*...Stay on designated roads and trails. Avoid sensitive areas at all times. Especially sensitive areas susceptible to scarring are streambanks...*”

Websites sponsored by both organized MV groups and individuals provide ample testimony to the fact that guidelines are not necessarily used. On websites sponsored by organizations and some individual websites the “Tread Lightly” guidelines are noted and recommended. The focus of these sites is generally not illustrative of the “Tread Lightly” ethic. Featured photos and trip reports are frequently contradictory to the guidelines showing multiple vehicles—headlight deep—in water and reports boasting of broken axles, radiators, transmissions, etc. These sites tend to support the concerns of those opposed to MV activity in streambeds. On reporting this to MV users, many of these sites have since disappeared or have been modified.

While all stakeholders recognize the potential for resource impacts, not all believe that concern has been realized in Texas because of the ephemeral flow of streambeds like the Nueces. Many MV enthusiasts believe that periodic flooding ameliorates short-term effects of MV use in the Nueces. These flood events redistribute sediment, gravel and even boulders—while often changing the stream course itself.

Flood and rainfall events also provide transportation of litter into streambeds and have

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significant water quality effects, although these are often short-lived. In addition, when organized groups plan trips, they often conduct litter and trash removal activities as they travel down the streambed. They also maintain that large rallies have only occurred on a limited basis and that normal outings are comprised of small groups of MV. MV users suggest that landowners alter the streambed by the use of heavy equipment and assert that this action causes as much, if not more, damage than MV activities.

In a very real sense, the legitimacy of MV use in public streambeds rests upon a definitive answer to the question of resource impacts. That is, the question of “traditional use” is highly subjective, while resource impacts at least can be quantified. In the presence of data quantifying those impacts, the decision becomes rather matter-of-fact. In its absence, the picture is not so clear. While landowners and environmental organizations can argue the philosophy of traditional streambed use, opposing viewpoints can equally argue that “traditional” use has neither a scientific or legal basis.

User Conflicts

Dr. Ron Kaiser, Department of Recreation, Park and Tourism Sciences, Texas A & M University stated his belief that the central issue is user conflict rather than resource impacts. The dichotomy of viewpoints regarding the issue of MV use in navigable streambeds is not limited to natural resource impacts and represents a social conflict regarding the use of a limited state resource. Several experts attest that this conflict of use is (or should be) the focus of the Task Force, rather than resource impacts. That basis is clearer and more direct than one that emphasizes a resource concern.

The Task Force did not totally agree with Dr. Kaiser’s position. While MV representatives did tend to agree with his comments, most others held the opinion that the importance of resource impacts in this issue is of equal or greater importance to that of user conflicts. Some members stated that the most significant goal is to protect drinking water sources and to protect instream flows.

Law Enforcement

During a panel discussion, TPWD wardens outlined their responsibilities as exercised in three field activities, (1) wildlife enforcement, (2) fisheries enforcement (recreational and commercial), and (3) water safety enforcement. In their roles as Texas Peace Officers, game wardens also enforce traffic law and the Penal Code. Traffic law enforcement is usually restricted to more flagrant violations such as Driving While Intoxicated (DWI), while Penal Code violations include offenses such as criminal trespass, discharging a firearm on a public road and assault.

Wardens from across the state reported problems, especially traffic law and Penal Code violations, associated with MV activity within state-owned streambeds (Appendix E). The Department of Public Safety reported that DPS officers could also assist with enforcing

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traffic and Penal Code violations in navigable streambeds, but their response protocol mandates DPS actions must be secondary to game warden response.

Agency Responsibilities

General Land Office

In its presentation to the panel, the General Land Office (GLO) stated that navigable streambeds are the public domain of the State, subject to the control of the legislature or to specific state agencies as directed by the Legislature. The GLO is responsible for managing lands and minerals that have been dedicated to the Permanent School Fund, to include leasing the minerals under the approximately one million acres of state-owned streambeds. This acreage figure is not easily confirmed, nor does it represent all lands available to MV use—much of it is inundated by water on a more or less permanent basis. A better figure, however, is not available.

In addition to mineral leasing, the GLO is authorized to issue right-of-way easements across navigable streambeds for projects such as pipelines, utilities, and roads. In exercising its responsibility for executing leases and easements across navigable streambeds, the GLO must determine which streambeds are state-owned and/or navigable. To make these determinations, historic records, field notes, survey plats and maps are used in conjunction with field assessments by Licensed State Land Surveyors (when necessary) employed by the GLO. Other state agencies such as TPWD, the Texas Commission on Environmental Quality (TCEQ), and the Office of the Attorney General look to the GLO for assistance in making state ownership and navigability assessments.

Texas Parks and Wildlife Department

TPWD regulates the taking of fish and wildlife in public waters and the disturbance of sand and gravel in the beds of navigable streambeds and tidally influenced waters.

Texas Commission on Environmental Quality

The Texas Legislature delegated to the TCEQ the control of diversion and consumption of water through a water rights system, and the control of pollutant discharge into the waters of the state.

Resource Impacts

There is limited scientific data about the impact of vehicular traffic in streambeds in Texas. However, the issue has been addressed in other states and in a recent position paper by the Texas Chapter of the American Fisheries Society. This report states MV damage streambeds by breaking down stream banks and causing damage to riparian vegetation, subsequently resulting in erosion, siltation, and the prevention of bank stabilization. This increases the potential for other water pollution impacts, which detrimentally affect aquatic ecosystems. The policy statement also maintains that MV are a major factor in the spread of non-native plants, and affect the behavior of many wildlife species, causing them to avoid areas used by MV.

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Presentations and preliminary reports by TPWD staff also reported damage to the streambeds and banks of the Nueces River and its flora and fauna.

Despite the paucity of scientific information, the National Forest Service in Texas has made a policy decision and banned this activity on most of its lands. This policy was established largely on concern about adverse impacts. With that, the NFS has also provided specific areas to accommodate MV use.

What is the Extent of the Issue on a Statewide Basis?

The issues and conflicts surrounding the Nueces and Llano Rivers have been well described by the Task Force and through other avenues of public comment. During the course of this initiative, it has become clear that there are statewide implications. Staff has received empirical and anecdotal information suggesting that MV use of streambeds is controversial in several watersheds across the state. It has become clear during this process that the issue is of greater statewide extent than may have initially been known. The Task Force focused on streambeds, but concerns have been expressed regarding MV usage on coastal public lands not covered by dune protection laws. Therefore, decisions made regarding the future of the Nueces and Llano rivers should not be made in an information vacuum, without consideration of the implications for other watersheds and stream courses.

Will Restrictions to MV Traffic in One Waterway Result in Relocation to Other Waterways?

This question is central to any strategy employed to manage the Nueces and Llano rivers. A consensus plan to reduce user conflict and concern specific to those areas would be of little value if the result simply shifts the conflict to another riverine venue.

What are the Implications for Aquatic Resources in the Future?

Rivers, streams and coastal areas of Texas represent some of the most accessible public lands in Texas and one of the few areas where MV can be operated (excepting dunes on coastal lands) with relatively minor restriction. In the face of a growing population and a relatively steady state of public land acreage, will these activities become more widespread and more intense in the coming years? The answer is clearly, "Yes."

A review of demographic data and of sales of ATV's suggests that this form of recreation will increase in popularity. With that, the eventual appearance of resource impacts moves from probability to likelihood and the frequency of user conflicts is destined to escalate. In 2000, 734,000 ATV's were sold nationwide and the industry predicts that by the year 2004, one million ATV's will be sold annually. The sale of ATV's has increased 120% since 1997. Further, as the population of Texas' urban areas increases, access to public lands outside the confines of cities will become a more sought-after.

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Can We Ascertain Resource Impacts?

Although limited scientific data in Texas indicates that MV can cause damage to riparian habitats, we do not know how many MV it takes to cause damage or prevent recovery of the riparian system if it is damaged. The riparian ecosystem is subject to natural stresses such as rainfall events and drought, and resident species have adapted to survive and recover from these natural stresses. The unanswered question is whether MV use within these riparian ecosystems will be the final stress that prevents the ecosystems' ability to recover from historic natural stresses. Due to differences in streambeds, some are more readily subject to erosion and other impacts caused by vehicular activity. In that context, the number of MV necessary to cause significant, irreparable damage within a given streambed may vary between and within watersheds. With that concern, it may be impossible to gather "perfect information" regarding the effects of MV use in streambeds. In short, decisions may need to be made in the absence of conclusive scientific data in Texas.

To What Extent is Safety an Issue?

As used by MV traffic today, streambeds are unregulated in terms of safety concerns. There are no established "right of way" provisions for MV as for boat traffic on waterways, no speed limits and no demarcated lanes. Laws that apply to conduct in public places generally apply to streambeds. However, traffic safety laws whose application is limited to public roads do not apply.

Are There Existing Legislative Models in Texas and Other States to Address These Concerns?

In Texas, the Open Beaches and Dune Protection laws in the Natural Resources Code stand as the best available models of resource protection coupled with legislative clarification of public access rights and private property rights. Montana's river use laws apply a comparable approach to its freshwater rivers, and Montana law bans most motor vehicle traffic from public waterways. New Mexico, Louisiana and many other states have authorized a state agency to adopt rules to manage state lands, including the beds and banks of waterways. Another possible legislative approach would be to delegate regulatory authority to a local entity, such as a river authority. This tactic has some parallel in Texas law (Chapter 11 of the Parks and Wildlife Code) governing treatment of aquatic vegetation.

Issues Upon Which the Task Force Agrees:

1. Streambed Users are a Diverse Group

The Task Force identified many different recreational uses of streambeds and a long list of user groups. With that background, education and enforcement activities must be targeted to identifiable groups and tailored for those groups. Further, not

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all MV operators in streambeds are members of organized groups.

2. Legal Access to Rivers Must Be More Clearly Defined

All groups agreed that there are legitimate non-destructive activities that occur in Texas streambeds and that legal access to these activities should not be constrained beyond current law, regardless of any future legislative action regarding MV. Traditionally, many streambeds, the Nueces River for example, have provided access to camping, picnicking, canoeing and swimming. Further, access to these areas provides significant recreational opportunities for low-income Texans who find these resources to be a sole source of affordable outdoor recreation.

3. Existing Laws Should be Enforced

All groups agreed that existing laws--specifically those laws regarding littering, water pollution, inappropriate public behavior and trespassing--provide enforcement officials a mechanism for addressing abuses of public and private resources. Several respondents suggested that an increased emphasis on law enforcement and an increased law enforcement presence would solve many, if not most, of these problems.

Several respondents commented that although there are existing laws to deal with many of the identified enforcement issues, practical enforcement of these laws is not an easy or straightforward task. Law enforcement officials face several constraints in enforcing current laws.

Violations of littering, pollution and trespass laws (for example) tend to be low on the priority list for most local law enforcement agencies, largely as a practical matter—they have many other enforcement responsibilities as well.

Many of these violations take place in secluded areas that are very difficult to reach by enforcement officials.

The gradient boundary that forms the legal demarcation between public riverbeds and private land is not easily discernable.

Violations are sporadic and not easily monitored.

4. Availability of River Access Points to the Nueces River is Not A Significant Issue

Members pointed out that the Nueces River courses over 108 miles in Real, Uvalde, Edwards and Zavala County. Within that reach, there are 24 access points. In Uvalde County there exists a minimum of 8 access points and one landowner in the county has donated land (17 acres) for access to the River.

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5. Private Property Rights

All members agreed that private property rights should be protected and respected by users. Virtually all members viewed the question of trespassing as a serious problem. It is often difficult to determine what constitutes private property along a streambed. As a result, it becomes difficult for users to determine if they are trespassing. Even where a landowner has clearly delineated public and private lands, trespass does occur. In one case, a landowner has documented 50 episodes of alleged trespassing in the last year.

Sometimes, perhaps even a majority of the time, river users simply do not know if they are on public or private lands. The difficulty lies in the definition of public property as it relates to streambeds. The legal demarcation between public streambeds and private land is the gradient boundary—which can only be surveyed on the ground by a licensed surveyor. The gradient boundary has never been surveyed on most streambeds in Texas, and any flood may have changed the boundary if it had been surveyed.

The ambiguity related to recognizing the gradient boundary is a double-edged sword. While it often fosters trespassing, one member suggested that the lack of clear boundaries was often used to prevent what should constitute legal access to public streambeds. Since the location of the gradient boundary is misunderstood by untrained persons, the lack understanding of gradient boundaries then becomes a significant law enforcement dilemma. Officers are often unsure which party in a trespassing dispute is correct.

It is clear that whether a stream is legally navigable or not it can be a controversial issue that leads to dispute over public and private rights to use. Left in its current state, the future holds promise only of an increasing number of conflicts.

6. Natural Events Have Significant Effects on Streambeds

Several members commented that streambeds are affected by a wide variety of naturally occurring events, particularly floods. These events redistribute sediment, gravel and even boulders—while often changing the stream course itself. Flood and rainfall events also transport litter into streambeds. These events have significant water quality effects as well, although these are often short-lived.

7. Texas Streambeds are Diverse and Must be Considered Individually

Members agreed that the diversity of Texas streambeds requires that management strategies for each be considered on individual merits.

8. Education of Users is Critical to Effective Streambed Management

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All groups agreed that many of the problems associated with streambed use could be—and should be—addressed by better education of users. Education should be directed at several areas including (but not limited to) littering/pollution, trespassing, effects on wildlife habitat, and dissemination of “tread lightly” principles. Organized MV groups can and often do provide a ready means of accomplishing this goal, but membership and organized activities are relatively minor compared to the overall number of users.

9. Management of Texas Streambeds Will Require a Cooperative Effort

Members agreed that all interested groups and individuals must work together to protect streambeds. Some members commented that Task Force members had more concerns in common than there were differences. Several members expressed a desire to find common ground to protect streambeds for future generations.

10. Alternative Recreational Sites Should be Developed

Task Force members agreed that alternative areas should be developed or procured for MV use. Some members commented that in the absence of such areas, public streambeds are one of the few venues for operation of these MV.

11. Pollution is a Significant Problem in Many Texas Streambeds

Pollution, in the form of littering and garbage dumping, often is a significant problem in Texas streambeds, and one that is readily visible to most users. Other forms of pollution that directly or indirectly affect water quality may not be so easily recognized, but are more damaging. For example, a quart of motor oil can contaminate 250,000 gallons of water and just over a pound of a common herbicide can contaminate one million gallons of water.

Landowners recognize that much of the visible trash and debris does not come from organized MV outings but rather from the groups who congregate at bridge crossings where refuse or garbage collection facilities are not provided. Nonetheless, landowners and environmental organizations see considerable litter in areas away from road crossings and water pollution resulting from releases of automotive fluids. Conversely, streambed users attribute much of the physical and chemical pollution occurring in streambeds to poor landowner stewardship.

The Texas Commission on Environmental Quality (TCEQ) has general authority over monitoring and control of water quality, and TCEQ resources can be used to verify concerns about water pollution. Taking the Nueces River as an example, chemical pollution appears less a problem than litter or garbage dumping. TCEQ divides the Nueces above Holland Dam in La Salle County into two segments (designated as segments 2105 and 2112). The demarcation point is FM 1025 in

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Zavala County. The uses for these segments are contact recreation, high-quality aquatic life use and public water supply/aquifer protection. TCEQ's current "303(d)" list of impaired segments does not include either segment 2105 or 2112. Accordingly, TCEQ considers these segments to meet established uses and to be unimpaired by pollution. Specific water quality studies of recreational impacts on water quality in the nearby Frio River at Garner State Park showed no impairment from the heavy (non-MV) use there.

Issues Upon Which the Task Force Disagreed:

1. Does the Use of MV in Streambeds Directly Affect Fish and Wildlife Resources?

Some members of the Task Force commented that operating a MV along a streambed or stream course is an excellent way to access areas where fish and wildlife viewing or fishing is available to them. Members commented that most of this activity takes place in areas that are too shallow and too ephemeral to support substantial populations and diversity of fish species. Members commented that many of those areas used by MV enthusiasts have never (in their memory) served as areas for substantial fishery resources.

Other members commented that MV operation displaces bird populations (turkeys and eagles were specifically mentioned) and could also affect fish populations. Some members commented that use of a MV is not a traditional means of accessing these areas and that wildlife responds to that disruption very quickly by moving to other areas.

2. Does the Use of MV in Streambeds Affect Habitat?

Members of the Task Force commented that when "Tread Lightly" principles are employed and when outings are correctly conducted, stream habitats are not affected. Members commented that MV are well maintained and are not sources of water pollution. Further, members commented that disruption of streambeds by MV is not significant compared to natural processes, particularly rainfall events, in affecting distribution of sediments, gravel and water quality.

Other members of the Task Force expressed concerns that effects are cumulative and related to numbers of MV. Members commented that as numbers of MV in streambeds increase, long-term effects will accumulate and may result in acceleration of erosive processes. Members commented that specific sections of streambeds (the Llano and Nueces rivers for example) have been demonstrably and irreversibly negatively affected by vehicular traffic.

3. Is There a Need for New Laws and Regulations?

While members generally agreed that enforcement of existing laws is important, the

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Task Force expressed a broad range of views on this issue of new laws or regulations. Some members commented that MV operation in a streambed is inappropriate and that new legislation should be enacted to restrict activities involving use of MV in streambeds.

Other members expressed concerns that new legislation would represent a first step in restricting the rights of low-income users and traditional local use of Texas streambeds. Members pointed out that wording of recent legislation was, in their view, too exclusive of certain user groups.

4. What Activities Constitute “Appropriate Use” of a Streambed?

Task Force members were polarized in their opinions about what constituted “appropriate use” of Texas streambeds with regard to MV use. Some members believe that any MV use in a streambed is inappropriate and others believe responsible MV use is quite appropriate. All agree that there is a limit and at some point such activity is damaging, but the Task Force did not reach agreement as to whether that is one, ten or a hundred MV.

Conclusion

The issue of MV in Texas streambeds is representative of the social and cultural changes Texas is experiencing in the 21st century. The membership of the Task Force represents a microcosm of the shifts in preferred means of outdoor recreation and an example of the user conflicts inherent to land and water based recreation that arise as Texas evolves from the “old” Texas to the “new” Texas. Some outside of TPWD have admonished the agency to avoid user conflict issues like this one. An examination of action items and issues before the agency and Commission over the last five to ten years is ample demonstration that this has not been, nor will likely be the case. It is not even possible to exercise such constraint. Many, if not most, of the issues the agency and Commission face routinely stem from user conflict. In the past it may have been more within a user group (allocation of a species via bag limits, etc) than between users (commercial and recreational fishers). The shift in focus has been a steady one. Resource and user conflicts are now moving to a more fundamental level (habitat, e.g. seagrass, riverbeds, parklands, etc). This will become more the case as population increases and more pressure is brought to bear on resources for which TPWD has responsibility. To ignore them undercuts the very foundation of what is necessary to manage fish and wildlife resources: water, water quality, and habitat. “Damned if you do and damned if you do not” – the old saying holds true.

That fundamental issue aside, staff have reached several conclusions based upon the information received through staff research and input from the Task Force. These conclusions are those of TPWD staff and do not represent a consensus or even majority view of the Taskforce. A draft of the report has been provided to the Taskforce and their direct comments made available to the Commission, but not necessarily included in the report.

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No Texas State Agency Has Authority to Regulate MV Use in Streambeds

The Texas Constitution establishes the public right to use rivers for navigation (Article XVI, section 59). The Texas Supreme Court carefully guards the public's ownership of riverbeds: "[E]ven prior to the admission of Texas into the Union it was its policy to reserve unto the government its river beds to be held in trust for all the people. Since Texas became a state, it has rigidly adhered to that policy." State v. Bradford, 121 Tex. 515, 538, 50 S.W.2d 1065, 1073 (1932). Bradford held that the riverbeds, unlike most public land, had not been transferred to the permanent school fund (PSF), in part because transfer to the PSF could have resulted in these lands being sold and passing out of the public domain.

Today, the growth of Texas and the scarcity of public land mean that the rivers and riverbeds serve many purposes—and sometimes these purposes conflict. In addition to navigational use and water supply, streambeds provide fish and wildlife habitat, opportunities for multiple forms of recreation, enhancement of private property values, and scenic beauty. The current controversy over motor vehicle use leads to broader policy questions: Should the use of riverbeds be managed for particular purposes? What should those purposes be? And who should be the manager?

The Task Force Members Are Divided on the Central Issue of MV Use in Streambeds

Not unexpectedly, Task Force members simply—and firmly—view the issue from of MV use in streambeds from different sides of the gradient boundary. The universe surrounding the operation of MV in streambeds has been well described by the Task Force, yet the members have found little common ground related to the focal issue of whether MV use in a streambed is an appropriate use of that resource. Some members believe it is entirely appropriate, others believe it is entirely inappropriate.

MV Use in Streambeds Affects Fish, Wildlife and Associated Habitats

It is the opinion of TPWD staff that in those streambeds where MV activities are conducted, water quality, fish and wildlife and their habitats are negatively affected by those activities. MV use in a streambed is not a benign activity; research conducted in other states has demonstrated the negative effects of MV use in streambeds on fish and wildlife resources. Preliminary results of investigations in Texas support those findings. It is an ecologically harmful activity.

Results of studies conducted in Texas and in other states are conclusive in describing the effects of petroleum-based fluids and engine coolants on water quality. While it has been posited that MV use in Texas is conducted without loss of motor fluids into surrounding water, observations do not support that position.

Although greatly affected by land use practices and alterations of the watercourses themselves, Texas rivers and adjacent plant communities still provide a great amount of

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wildlife and fishery habitat—in a state in which the population is expected to double in the next 40 years and in which land fragmentation is a constant resource challenge. And as the 21st century progresses, these resources will become increasingly important in water quality maintenance and as fish and wildlife habitat. The frequency and magnitude of MV activities are not regulated in Texas. Against that backdrop, it appears unlikely that the water quality, habitat and fish and wildlife resources in those affected streambeds can be sustained over the long-term, especially if current MV recreational activity continues and grows, as it is expected to do.

MV Use in Streambeds and other Wetlands is Not a Recommended Use

Manufacturers of MV do not recommend operation of these vehicles in streambeds or wetlands, in fact, it is discouraged. The prevailing recommendations of manufacturers and national MV organizations specifically direct operators to avoid water resources. All of the major vehicle manufacturers publicly support “Tread Lightly” principles. “Tread Lightly” clearly states that operation of a MV in a streambed is not an appropriate use of that vehicle.

River Access Exists, But is Largely Inadequate

Any action to restrict MV use in streambeds might have unintended consequences that must be considered and addressed in order to not create or enhance other conflicts. The attraction of Texas streambeds to users is that these are public lands, open for use by all Texans. Public access points are generally in the form of road crossings and they are seldom adequate for safe access, much less public use for recreational purposes. On the Nueces River (for example) many of the problems reported by all the stakeholders in this process were related to inadequate infrastructure and services at those points.

Public/private land is generally not delineated where roads cross streambeds. The confusion surrounding the gradient boundary as the demarcation between public and private land can result in inadvertent use of private lands. Further, that same confusion, by ignorance or design, has been employed to discourage legal access of users.

Most of these access points lack adequate parking areas, trash receptacles, signage and restroom facilities. The results are predictable: traffic violations, litter, trespassing, safety issues and inappropriate public behavior. River access is inadequate to support the user demand for both places to enter and enjoy the stream and to maintain the quality of the user’s experience.

Venues For Off Road Vehicle Recreation Are Inadequate

If MV access to streambeds is eliminated, enthusiasts will look for other venues to enjoy their recreational activity. It seems reasonable that alternative areas for MV use could and should be developed through available trails programs or new programs that invited development of those trails. It is possible that given a different venue for MV use, most

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of the activity currently taking place in streambeds would move to non-riparian sites. A lack of venues certainly contributes to current and expanding use of public lands for this type of recreational activity. TPWD does have a program that makes federal funds available for MV trail development.

Any Change in Current Law Would Present Both Consequences and Opportunities

The complexity and magnitude of the issue suggests that resolution will require statutory changes. Texas has roughly one million acres of public land cradled within its streambeds, and these areas are among the last extensive fish and wildlife habitats in Texas. The lack of clear regulatory authority to manage MV use in Texas streambeds results in a management landscape that results in inadequate management.

Perhaps the most often voiced reason for use of MV in streambeds is to move upstream or downstream from an area immediately adjacent to an access point. There are clearly substantial consequences to an outright ban on MV use in streambeds. When access points become congested, using a MV becomes a means of escaping that congestion. It is important to note: Use of MV in streambeds like the Nueces River has been and continues to be an outdoor recreation mainstay for local users. Changes in law that might ban the practice of using a MV to move up and down a streambed would effectively exclude many who rely on MV use to access their (often) sole outdoor recreational opportunity.

While the Task Force focused on motorized vehicles, many landowners brought to the Task Force meetings and the Joint Interim Committee hearing other legitimate concerns and frustrations—not necessarily related to MV activities--about streambed use adjacent to their properties. For example, landowners questioned the safety of river use when hunting and target shooting with rifles is unrestricted in the riverbeds. Moreover, other states have used their river laws to reinforce landowner property rights and to limit liability. Legislation that addresses MV use could also deal with broader landowner concerns.

There is no easy solution to this very easily defined problem. The simple solution offered by some has unintended consequences. In these “tragedy of the commons” issues, unintended consequences nearly always result. Solutions must be comprehensive and thoughtful. Resource managers and policy makers most often have to take a deep breath, weigh the relative benefits and the future cost of taking no action, then decide. Hopefully, this report has provided sufficient information and analysis to confidently do so.⁶¹

⁶¹The task force report ends here.

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RECOMMENDATIONS

Texas clearly has significant water statutory, regulatory, and policy challenges ahead. Overcoming these challenges will require leadership, political resolve, judicious policies, and responsive institutions. “Water” will be an important concern for every future Session.

Texas regulations, laws, and institutions will have to continue to evolve in order to keep pace with, and sometimes to encourage, new developments in technology, better science and increased understanding of the complex issues involved in maintaining our natural resources so that they can, in turn, sustain Texas and Texas economies.

In addition to the recommendations presented below, the Joint Committee on Water Resources encourages all interested legislators and parties to closely inspect the *Efficient Water Use for Texas: Policies, Tools, and Management Strategies* study discussed earlier in this report, under the charge “Increasing Efficient Use of Existing Water Resources.” This study, by Texas Agricultural Experiment Station and Environmental Defense, is a comprehensive analysis of possible water conservation and efficiency measures and strategies that could make significant contributions in meeting Texas’ future water needs.

Based on its findings, the Joint Committee on Water Resources submits the following recommendations to the 78th Texas Legislature:

- Encourage the conservation of vital groundwater resources in a manner that will sustain and enhance irrigated agriculture by providing funding to demonstration projects in irrigation areas to assess the profitability and effectiveness of efficient water and energy conserving irrigation technologies.
- Direct the Texas Water Development Board and the Regional Water Planning Groups to develop recommendations on how to define and evaluate water-use efficiency measures that will be needed to meet the goals and strategies they identify for inclusion in the state and regional water plans.
- Direct the TWDB to consider municipalities’ existing water conservation efforts in evaluating eligibility of applications for state financial assistance.
- Promote the development of options to ensure compliance with statutory and regulatory requirements associated with surface water rights issued by the state.
- Develop and implement mechanisms to benefit local communities from which water is exported, such as by directing water export fees and/or revenues to local Economic Development Corporations, counties, and school districts to benefit the communities of origin.

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- Consider clarifying the Texas Water Code concerning the issuance of new water rights permits for instream uses or bays and estuaries.
- Explore the use of a planning process for providing for instream and bay and estuary needs, including creating or utilizing an existing basin-by-basin regional planning approach to address these needs. These strategies could be incorporated into the State Water Plan in a timely and efficient manner; and they could include:
 - provisions for drought contingencies and consideration of all aspects of environmental flow needs including but not limited to water quality, seasonality and frequency; and
 - a prioritization process customized by and for each basin, for providing for environmental flow needs, in order to focus the state's resources on areas with the highest critical need.
- Support and provide incentives for water infrastructure projects that provide for environmental flow needs in a comprehensive and efficient manner.
- Continue to support the usage of the Texas Water Trust as one mechanism for dedication of existing water rights to satisfy environmental flow needs, including exploring incentives and funding mechanisms to increase the effectiveness of the Trust.
- Continue to support state funding of scientific studies to increase understanding of the impact of instream flows and freshwater inflows on rivers, streams, bays, estuaries and the ecosystems that depend on them.
- Expand the role of state assistance programs with a focus on financing gaps associated with implementation and funding for regional projects, small, rural, or disadvantaged communities, innovative water management strategies (such as desalination, weather modification, and brush control) and water conservation. Funding should be made available to allow state assistance programs to:
 - offer funding for pilot demonstration projects which are consistent with the Regional Water Plans and promote water conservation techniques and innovative technologies (such as desalination, weather modification, and brush control).
- Grant constitutional and statutory authority to the TWDB to exercise more flexibility relating to grants and zero interest loans for water projects, which are consistent with the Regional Water Plans, using state general obligation bond proceeds.

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- Consider creating new funding sources to support agricultural water conservation to implement efficient irrigation systems and encourage research on crops and landscape plants that are drought and saline tolerant.
- Restructure the existing statutorily authorized agricultural water conservation programs to provide greater flexibility to offer the range of financial assistance necessary to address the funding, research, and technology transfer needs of the agricultural community.
- Explore alternative funding options for water supply projects, which are consistent with the Regional Water Plans, including public/private partnerships and assessments to ensure the overall benefit of such options.
- Promote and create strategies for increasing Texas' share of federal monies for water projects, which are consistent with the Regional Water Plans, including working with Congress, other states and federal agencies on developing a plan to achieve these goals.

*Please note that many of the recommendations concerning water financing are closely modeled after or identical to the recommendations in the *Texas Water Development Board Infrastructure Financing Report*.

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APPENDIX A

Text of Article 5 of SB 2, by Brown, 77th Texas Legislature

ARTICLE 5. JOINT COMMITTEE ON WATER RESOURCES

SECTION 5.01. In this article, "committee" means the joint committee on water resources.

SECTION 5.02. The committee shall conduct an interim study and make recommendations regarding:

- (1) increasing the efficient use of existing water resources;
- (2) developing sufficient long-term water financing strategies;
- (3) improving existing water conveyance systems;
- (4) water marketing;
- (5) determining the appropriate role of environmental and wildlife concerns in water permitting and water development; and
- (6) protection of the natural condition of beds and banks of the state-owned watercourses.

SECTION 5.03. The committee is composed of six members as follows:

- (1) the chair of the Senate Committee on Natural Resources and the chair of the House Committee on Natural Resources;
- (2) two members of the senate appointed by the lieutenant governor; and
- (3) two members of the house of representatives appointed by the speaker of the house of representatives.

SECTION 5.04. The committee shall:

- (1) meet at least annually with the Texas Natural Resource Conservation Commission and the Texas Water Development Board; and
- (2) receive information relating to:
 - (A) encouraging the effective development of water marketing and water movement;
 - (B) prioritizing the use of state funds for financing the development and conservation of water resources; and
 - (C) identifying reasonable mechanisms, including measures for encouraging donation of water rights, for protecting instream uses.

SECTION 5.05. Not later than November 1, 2002, the committee shall make a final report to the lieutenant governor, the speaker of the house of representatives, and the 78th Legislature evaluating the issues described in Section 5.02 of this article.

SECTION 5.06. The committee has the authority necessary to perform its duties and, in connection with those duties, may call and hold hearings.

SECTION 5.07. The committee may request the assistance of state agencies, departments, or offices to carry out its duties.

SECTION 5.08. The Senate Committee on Natural Resources and the House Committee on Natural Resources shall provide staff to the committee.

SECTION 5.09. The committee shall submit a proposed budget to the appropriate

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committee on administration in each house of the legislature. The administration committees shall jointly approve the committee budget in an amount appropriate for the committee to accomplish its duties under this article.

SECTION 5.10. The committee may travel around the state and hold hearings or public meetings as needed to fulfill its duties under this article.

SECTION 5.11. This article expires and the committee is abolished on January 1, 2003.

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APPENDIX B

Summary of Senate Bill 2
by Brown/Lewis
77th Legislature, 2001

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Senate Bill 2

SENATOR J.E. "BUSTER" BROWN

REPRESENTATIVE RON LEWIS

Relating to the development and management of the water resources of the state, including the ratification of the creation of certain groundwater conservation districts; providing penalties.

ARTICLE 1. TEXAS WATER ADVISORY COUNCIL

Creates the 13 Member Texas Water Advisory Council

(New Article 9, Water Code)

- Council Members: TNRCC, TWDB, TPWD, TDA, GLO, 3 State Representatives, 2 Senators & 3 Public Members (1 each to represent groundwater management, surface water management, and the environmental community)
- The Water Advisory Council will provide focus and recommendations on state water issues, including but not limited to:
 - furtherance of key tenets of SB 2;
 - promoting flexibility and incentives for water desalination, brush control, regionalization of water projects, weather modification and public private partnerships relating to water projects;
 - encouraging the use of supplemental environmental projects for water infrastructure needs;
 - offering advice for development of prioritization criteria for TWDB to consider in funding of projects recommended in the State Water Plan
 - promoting adequate financing for surface water and groundwater projects;
 - ensuring commonality of technical data and information developed by participating state agencies in order to provide for seamless transition between water planning and water permitting;
 - encouraging the enhancement and coordination of state, interstate and international efforts to improve environmental quality and living conditions along Texas' borders;
- Water Advisory Council may not:

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- promulgate rules;
 - regulate water use, water quality, or any other aspect of water resource management;
 - plan or construct water resource projects, or have such projects planned or constructed;
 - grant or loan any funds for the construction of water resource projects;
 - establish water resource management standards or otherwise usurp the authority of or infringe upon the duties, responsibilities, or powers of local, regional or state water management entities, including groundwater districts, river authorities and compacts, regional water planning groups, or member agencies of the Texas Water Advisory Council; or
 - consider or discuss any specific permit, project or recommendation for a project, until the permit for the project has been issued by the state and all motions for rehearing have been overruled.
- Water Advisory Council to Submit Report and Recommendations to the Legislature
 - Water Advisory Council will provide a forum for state-level analysis of surface water authorities:
 - On a five-year review cycle, each authority will present its annual self-assessment report to the Advisory Council.
 - The authority will report to the Council its self assessment of its performance associated with the following:
 - How the authority is achieving its stated mission and goals, and identification of any barriers that exist in achieving such goals;
 - how the authority is providing service to its customers, including mechanisms the authority provides to encourage input from the public and its customers;
 - how the authority is addressing issues raised by its most recent management audit, if the audit is required by TNRCC rules, including its administrative policies; and
 - the authority's role in the regional water planning process.
 - The authority's report to the council shall include recommendations to the council, relating to:
 - any inter-regional issues the authority has identified as

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problematic and any potential solutions to those issues; and

- solutions to any barriers the authority determines is interfering with the successful implementation of the approved regional water plan or state water plan.
- The TNRCC shall expand the applicability of its rules (currently 30 TAC, Chapter 292) to include all 30 of the entities named in SB 2, rather than just the 20 entities currently identified in these rules.
- SB 2 provides definition for “conjunctive use” to mean the combined use of groundwater and surface water sources that optimizes the beneficial characteristics of each source of water. (Article 9, Water Code)

ARTICLE 2. SURFACE WATER AND GROUNDWATER CONJUNCTIVE MANAGEMENT; REGULATORY INCENTIVES

- Defines “river basin” as a river or coastal basin as designated by the TWDB, which does not include water originating in bays or arms of the Gulf of Mexico. This clarifies that movement of desalinated ocean or bay water, by definition, could not be considered an interbasin transfer. (§11.002, Water Code)
- Provides definitions of “agriculture,” “agricultural uses” and “nursery grower.” These definitions include the meanings of some terms now being deleted such as “irrigation,” “stock raising” and “crop or livestock production,” as well as of additional activities such as confined animal feeding operations, the cultivation of plants in containers, viticulture (wine making), and leaving land idle for certain purposes, including crop or livestock rotations. The definitions apply to wholesale nursery growers, and not to retail nursery and home and garden centers. (§11.002, Water Code)
- Includes “agricultural uses” (and strikes “irrigation”) in the list of purposes for which water may be appropriated, and moves agricultural uses up to same category as industrial uses. (§11.023, Water Code)
- In list of preferences for the appropriation of water, SB 2 replaces “irrigation” with “agricultural uses,” and moves “agricultural uses” up from being third on the list to being second, and equal to “industrial uses,” on the list. (§11.024, Water Code)

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- SB 2 makes no changes to existing law relating to the junior rights status of interbasin transfers.
- Clarifies that a permit exemption for domestic and livestock reservoir applies to the impoundment of 200 acre-feet on average in any 12-month period. Also, extends that exemption to 200 acre-foot impoundments for private fish and wildlife purposes. (§11.142, Water Code)
- Clarifies that the cancellation of a permit for inaction does not apply to a permit for construction of a reservoir designed for the storage of more than 50,000 acre-feet of water. (§11.146, Water Code)
- Clarifies TCEQ's responsibility, when considering permits within 200 miles of the coast, to consider bays and estuaries studies by the TPWD and other state agencies. (§11.147(b), Water Code)
- Expands exemptions from cancellation of water rights for nonuse to include water rights to meet long-term public water supply, electric generation needs, long-term water planning, or if the water right was obtained due to construction of a reservoir funded, in whole or in part, by the holder of the right. (§11.173, Water Code)
- Requires TWDB, in coordination with the regional water planning groups and the groundwater districts, to obtain or develop groundwater availability models for major and minor aquifers, and provide the models to groundwater conservation districts and regional water planning groups. Such modeling of major aquifers shall be completed no later than October 1, 2004. Makes the TWDB's currently voluntary water use survey mandatory, in order to increase its effectiveness in projecting future water use and to recognize outstanding water conservation efforts. Failure to return survey would make an entity ineligible for TWDB funding and/or TNRCC permitting. SB 2 allows survey responses to be exempt from open records requirements, if such an exemption is requested in writing by the survey respondent. Survey requirements to not apply to use of water supplied by windmills for domestic and livestock uses. (§16.012, Water Code)
- Authorizes the TWDB, in preparing the state water plan, to provide a statewide perspective and policy analysis of all of the 16 regional water plans, in addition to incorporating the approved regional water plans. Requires TWDB guidance principles for the regional water planning groups to include provisions for the protection of agriculture and the natural resources of the state. Clarifies that a legislative designation of "a river or stream segment of unique ecological

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value” means only that a state agency or city may not finance reservoir construction in a stream segment so designated. (§16.051, Water Code)

- Currently in Texas, there is no reporting requirement for, and no central registry of information on the location of existing water pipelines. SB 2 requires the TWDB to, by rule, require holders of water rights permits, groundwater export permits, retail public water suppliers, wholesale water providers and irrigation districts to report to the TWDB information on certain water pipelines and other facilities that can be used for water conveyance. Requires regional plans to include this information on water conveyance facilities, including but not limited to currently used and abandoned oil, gas and water pipelines. Also requires regional plans to describe the impact of proposed water projects on water quality, and the impact of the plan on unique river and stream segments if the regional water planning group or the legislature determines that a site of unique ecological value exists. (§16.053, Water Code)
- SB 2 adds the following to the list of issues the TWDB must determine before approving a regional water plan:
 - plan includes water conservation practices and drought management measures;
 - plan is consistent with long-term protection of the state’s water resources, agricultural resources, and natural resources. (§16.053, Water Code)
- Provides a process for conflict resolution between a groundwater conservation district management plan and the regional water plan. Also, requires regional water planning groups to examine the financing needed to implement their water management strategies and projects and to report to the TWDB by June 1, 2002, how local governments and political subdivisions propose to pay for these projects, and what role the state should have in such financing, with particular attention to the increased level of state participation. (§16.053, Water Code)
- Requires local water planning efforts to consider the implementation of a desalination program, if practicable. Allows a groundwater district, or any other political subdivision to provide new information that a regional water planning group must consider for a possible amendment of the regional water plan. If the entity requesting a change is dissatisfied with the decision of the regional planning group, it can request the TWDB to review the decision and consider changing the state approved regional plan. Also, adds to Chapter 16, Water Code, language already found in Chapter 35, providing that groundwater

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districts are the state's preferred method of managing groundwater. (§16.054, Water Code)

- Transfers responsibility from the TNRCC to the TWDB for the designation of groundwater management areas (GMAs). Directs the TNRCC to complete any GMA designations that are, by 9/1/01, already underway within the TNRCC. Requires the TWDB to designate groundwater management areas for major and minor aquifers across the state by September 2003, and TNRCC to complete designations of priority groundwater management areas (PGMAs) by September 2005. (§§ 35.004 and 35.007, Water Code)
- Streamlines the process for creating groundwater districts in Priority Groundwater Management Areas (PGMAs), encourages new district boundaries to be based on designated Groundwater Management Areas and PGMA and authorizes greater flexibility in district creation if standard Chapter 36 district is not appropriate. Requires the TNRCC to determine whether creation of a district is feasible as part of its considerations in designating a PGMA. (§§35.008, 35.009, 35.012, 35.013, 35.018 Water Code)
- Defines “river basin,” “agriculture,” “agricultural use,” “conjunctive use” and “nursery grower” in Chapter 36, Water Code. (§36.001, Water Code)
- Provides that groundwater districts are the preferred method of groundwater management through rules developed, adopted and promulgated by a district in accordance with the provisions of Chapter 36. (§36.0015, Water Code)
- SB 2 provides a very streamlined process for groundwater conservation district creation, upon petition of landowners to the TNRCC. Ensures that this process will not be used to create shell districts, however, by requiring that districts created through this expedited process must have all of the powers and responsibilities of a standard Chapter 36 district. TNRCC may not certify a petition to create a district if it finds the proposed district is not adequately funded or if the boundaries do not provide for effective management. (§36.015, Water Code)
- In response to the recent court case in West Texas, clarifies that groundwater districts may regulate spacing and production of wells based on tract size and distance from property lines. Also, expands the issues for which groundwater districts are authorized to make and enforce rules to include protection of groundwater quality. (South Plains LaMesa Railroad, Ltd. v. High Plains Underground Water Conservation District No. 1) (§§36.002, 36.101, 36.116 Water Code)

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- Provides that the penalties for violation of groundwater conservation district rules will be sufficient to ensure adherence to district rules. Penalties are set at up to \$10,000 per day per violation. (§36.102, Water Code)
- Removes the existing law requirement that future groundwater district plans must be consistent with the regional water plan in place at the time the groundwater district's plan is being developed. Directs the districts to develop their management plans using the districts' best available data, and to forward those plans to the regional water planning group for consideration in their planning process. (§36.1071, Water Code)
- Adds the following management goals that groundwater districts' management plans must address:
 - addressing drought conditions, and
 - addressing conservation. (§36.1071, Water Code)
- Provides a process for appeal of a groundwater district management plan if it is in conflict with the state water plan, and provides a process for resolution of such conflicts. (§36.1072, Water Code)
- SB 2 substantially increases the joint planning responsibilities of groundwater districts that share a management area.
 - Districts may jointly contract for studies or for projects, including aquifer recharge, brush control, desalination, weather modification, regionalization and treatment or conveyance facilities;
 - a district, with good cause, may petition for a TNRCC inquiry into a neighboring district if the other district refused to join in the joint planning process or if the depletion rate exceeds the rate of depletion projected in adopted regional plan or in the groundwater districts' management plan. (§36.108, Water Code)
- SB 2 includes the groundwater district permit exemption language agreed upon by the Consensus Groundwater Stakeholders group. Maintains districts' ability to exempt wells on a district-by-district basis, and allows for an export fee to be assessed on any water withdrawn from exempted wells, if that water is transported for use outside the district.
 - Amends exemptions provisions relating to existing permit exemptions for oil and gas production, mining operations and wells for less than 25,000 gallons per day if for domestic or livestock or poultry uses:
 - Oil and Gas production exemptions -- limits existing district permit

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exemptions to only water supply wells that are (1) on the drilling rig site; (2) supplying a rig that is currently drilling or exploring; and (3) the responsibility of the person holding the drilling permit.

- Mining operations exemptions -- clarifies that existing mining exemptions still apply for water being produced for “mining purposes” and for any use of that water in addition to mining purposes; but district permit requirements would apply for any water produced in addition to the water withdrawn for mining purposes;
- Exemptions for wells producing less than 25,000 gallons per day if for domestic or livestock or poultry uses -- limits this exemption to wells on tracts of land larger than 10 acres. This addresses the concern that a current exemption from district permit requirements is beginning to have unintended consequences. Historically, the types of wells targeted by this exemption were traditional livestock and rural domestic wells. Now, however, farms and ranches are being subdivided into ranchettes and housing developments. These wells, by definition being exempted as domestic wells, are now viewed by some as potentially posing a threat to the groundwater resources and to the remaining neighboring rural and agricultural users. (§36.117, Water Code)
- Clarifies authority of groundwater districts relating to the transfer of groundwater out of district:
 - district rules can require permit amendment in order to transfer groundwater
 - districts can not regulate exporters more restrictively than in-district users
 - application procedures and fee must be equal to and/or combined with fee and procedures for in-district application
 - allows district to assess an export surcharge, using one of the following methods: (1) a fee negotiated between the district and the exporter; (2) a rate not to exceed the equivalent of the tax rate per \$100 valuation for each 1000 gallons transferred or 2.5 cents per 1000 gallons of water; or (3) for a fee-based district, a 50% export surcharge in addition to the district’s production fee;

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- prohibits denial of a well permit based on the intention to export
- provides that the term for the authorization to transfer water from a groundwater conservation district must be at least 30 years, unless otherwise negotiated by the parties. SB 2 clarifies that if other existing permitted users are subject to periodic reevaluation of amount of allowed production (such as a five-year permit renewal process) to accommodate changing conditions of the aquifer --- then a 30-year export permit term would also be subject to such a periodic reevaluation of permitted amount, if additional factors warrant.
- export permit renewal decision must be objective, scientifically based decision that applies the same standards to all wells in the district
- revenues from export fee can not be used to prohibit exports, but may be used for expenses relating to enforcement of the district's rules;
- export provisions apply only to transfer of water that is permitted after September 1, 1997;
- a district shall not adopt rules expressly prohibiting the export of groundwater.
- in applying these export provisions, a district must be fair, impartial, and nondiscriminatory. (§36.122, Water Code)
- SB 2 authorizes groundwater districts to assess production fees -- to be based on the amount of groundwater authorized to be withdrawn or on the amount actually withdrawn. Districts may assess production fees instead of, or in addition to, any taxes levied by the district. Production fees shall not exceed:
 - one dollar per acre foot per annum for agricultural use or
 - ten dollars per acre foot per annum for water used for any other purpose.
 - Barton Springs-Edwards Aquifer Conservation District, the Guadalupe County Underground Water Conservation District and the Lone Star Groundwater Conservation District are limited to annual production fees of \$1 per acre foot per year for agricultural use and 17 cents per 1000 gallons for water used for other purposes.
- Certain districts are exempted from the production fee language
 - Edwards Aquifer Authority
 - Fort Bend Subsidence District

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- Harris-Galveston Coastal Subsidence District
 - Barton Springs-Edwards Aquifer Conservation District
 - Any property tax based district created before September 1, 1999, unless otherwise authorized by special law
-
- Any district may assess a production fee for any water produced from a well exempt from district permitting requirements, if that water is subsequently sold to another person. (§36.205, Water Code)
-
- District fees may not be used to purchase groundwater rights unless the purchased rights are acquired for conservation purposes and are permanently held in trust not to be produced. (§36.206, Water Code)
-
- SB 2 strengthens the TNRCC's enforcement mechanisms for failure of a groundwater district to participate in joint planning to ensure compatible management of their underlying aquifer:
 - Authorizes the TNRCC to enforce the joint management if one of the districts fails to adopt rules or if the resource is not adequately protected due to a district's failure to enforce the rules.
 - Deletes language allowing the TNRCC to remove a district's taxing authority and replaces it with language allowing the TNRCC to request the attorney general to place a non-performing district into receivership.
 - Provides for appointment of a receiver. (§§36.3011, 36.303 and 36.3035, Water Code)
-
- Provides that the Dallas County Utility Reclamation District is defined as a municipal corporation and political subdivision for the purposes of the electric deregulation bill (SB 7) enacted by the 76th Legislature. (§51.149, Water Code)
-
- Amends Utility Code to provide that a government-operated utility may not disclose information related to volume of use or billing information if such nondisclosure is requested by the user. This provision does not apply to a utility if the utility's primary source of water is a sole-source designated aquifer. (§182.052, Utilities Code)
-
- Amends enabling statute of the Edwards Aquifer Authority (EAA) to:
 - Add the new definitions for agriculture, agricultural uses and nursery grower to the enabling legislation of the Edwards Aquifer Authority;
 - cap fees for agricultural uses of water in the EAA at \$2.00 per acre foot;

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- authorize the EAA to contract for injection or artificial recharge only if provision is made to protect and maintain the quality of groundwater in the receiving portion of the aquifer and the water used is from the Edwards aquifer or the water is recharged through a natural recharge feature.
- Amends the enabling statute of the North Harris /county Water Authority to allow them to establish rates and classification of fee and rate payers and to authorize the board to exempt certain wells from fees.

ARTICLE 3. DISTRICT RATIFICATIONS AND CREATIONS

- Cow Creek Groundwater Conservation District
- Crossroads Groundwater Conservation District
- Hays Trinity Groundwater Conservation District
- Lone Wolf Groundwater Conservation District
- Lost Pines Groundwater Conservation District
- McMullen Groundwater Conservation District
- Kimble County Groundwater Conservation District
- Red Sands Groundwater Conservation District
- Refugio Groundwater Conservation District
- Southeast Trinity Groundwater Conservation District
- Texana Groundwater Conservation District
- Tri-County Groundwater Conservation District
- Brazos Valley Groundwater Conservation District
- Post Oak Savannah Groundwater Conservation District
- Mid-East Texas Groundwater Conservation District
- Northeast Travis County Utility District

ARTICLE 4. WATER INFRASTRUCTURE FINANCING

(New Subchapter O, Chapter 15, Water Code)

Creates the Water Infrastructure Fund, as a fund in the state treasury, to be administered by the TWDB, to provide funding for the implementation of water projects recommended through the state and regional water planning process.

- Fund consists of money from:
 - appropriations from the legislature;
 - any source of revenue the legislature may dedicate for deposit to the water infrastructure fund;
 - repayments of loans made from the water infrastructure fund;
 - interest earned on money credited to the fund and depository interest allocable to the water infrastructure fund held at the state treasury;

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- and
 - proceeds from the sale of any political subdivisions bonds or obligations held in the water infrastructure fund and not otherwise pledged.
- Outline of Water Infrastructure Fund Structure and Incentives:
 - Intended to make financial incentives available for all entities in order to facilitate the implementation of strategies recommended in the State Water Plan to meet need.
 - Fund targets critical gaps in existing financial assistance programs in Texas, including:
 - Current Funding Gap -- Rural and small community projects often cannot access financial assistance and/or cannot qualify for market rate lending.
 - SB 2 SOLUTION -- All financial assistance would receive some level of subsidy, and small, rural or disadvantaged communities could be eligible for deep subsidies including low interest loan, zero interest loans, and loan forgiveness or grants.
 - Current Funding Gap -- Current programs lack any financial assistance for activities between planning and construction.
 - SB 2 SOLUTION -- Fund would provide bridge funding for preconstruction activities, with incentives such as deferred payments until construction begins.
 - Current Funding Gap -- Lack of incentives for regionalization of water projects.
 - SB 2 SOLUTION -- Fund would encourage regional projects to meet all area needs through direct financial incentives, including matching disparate timing of needs of the potential participants.
 - Public Private Partnerships -- Funds may be provided to counties, municipalities, river authorities, and districts to provide incentives to public and private water systems and individuals for the conservation and development of water supply.
 - Fund must accommodate a wide range of applicant categories and levels of sophistication, project size and complexity, and financial capacity and need.

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- Creates the Rural Water Assistance Fund (New Subchapter P, Chapter 15, Water Code)
 - Creates the rural water assistance fund, to be administered by the TWDB.
 - Fund is intended to provide financial assistance to smaller, rural water suppliers at lower cost that is currently available, and to ensure the public outreach and technical assistance critical for these smaller rural water systems to succeed.
 - Will specifically assist small systems in participating in regional water projects.
 - Defines “rural political subdivision” and allows such an entity to partner with the Texas Department of Agriculture or the Texas Department of Housing and Community Affairs to submit a joint application for financial assistance from the rural water assistance fund.
 - Fund consists of appropriations, loan repayments and TWDB general obligation bond proceeds.
 - Would have required only an initial “start-up” appropriation of \$6 million, which would have been sufficient to administer loans during the first biennium and to “buy down” loan rates to 5% for all applicants for 30 year loans.
 - Had it been appropriated, the fund would have been operated in a manner to repay the state bonds, thereby requiring the only outlay of the state to be the general revenue appropriated initially.
- Defines “regionalization” in Section 15.001, Water Code.
- Expands use of existing TWDB grant funding to include construction, acquisition, improvement or enlargement of projects involving desalination, brush control or weather modification. (§15.002, Water Code)
- Expands use of existing TWDB loan funding to include brush control, weather modification, regionalization, desalination, and projects providing regional water quality enhancement services as defined by TWDB rule, including regional conveyance systems. (§15.102, Water Code)
- Public Private Partnerships
 - Makes political subdivisions eligible for loans under the TWDB’s agricultural water conservation bond program.
 - Expands TWDB’s agricultural water conservation bond program to include brush control and precipitation enhancement.

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- Provides financial incentives for public private partnerships involving nonpoint source pollution control and estuary management projects.
- Expands property tax exemption for water conservation initiatives to include desalination projects or brush control projects.

ARTICLE 5. JOINT COMMITTEE ON WATER RESOURCES

- The Committee shall conduct an interim study and make recommendations regarding:
 - increasing the efficient use of existing water resources;
 - developing sufficient long-term financing strategies;
 - improving existing water conveyance systems;
 - water marketing
 - determining the appropriate role of environmental and wildlife concerns in water permitting and water development; and
 - protection of the natural condition of beds and banks of the state-owned watercourses.
- Joint Committee has 6 Members
 - Chairs of the Senate and the House Committees on Natural Resources
 - 2 Senators appointed by the Lt. Governor
 - 2 Representatives appointed by the Speaker
- The Joint Committee may call and hold hearings, and shall:
 - meet at least annually with the TNRCC and the TWDB, and
 - consider information relating to
 - encouraging the effective development of water marketing and water movement;
 - prioritizing the use of state funds for financing the development and conservation of water resources, and
 - measures for encouraging donation of water rights, for protecting instream uses.

ARTICLE 6. RULEMAKING PROCEDURES FOR THE EDWARDS AQUIFER AUTHORITY (EAA)

- Provides that the EAA is no longer subject to the Administrative Procedures and Texas Register Act but is subject to open meetings and open records

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requirements. Sets out additional requirements for the EAA, including requirement for a contested case hearing on a permit application if a person with a related justiciable interest requests the hearing.

ARTICLE 7. LIMITED LIABILITY FOR AQUATIC HERBICIDE APPLICATION

- Defines “commercially licensed aquatic herbicide applicator,” and caps liability at \$2 million for each occurrence of personal injury, property damage, or death resulting directly or indirectly from the application of aquatic herbicide in compliance with contracts, law, and the license terms or permit. Liability cap does not apply under certain, specified circumstances. (§26.050, Water Code)

ARTICLE 8. CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs)

- Defines “sole-source surface drinking water supply” and “protection zone,” and requires a TNRCC permit for construction of a CAFO within a protection zone. (§26.0286, Water Code)

ARTICLE 9. REVOCATION OF CERTIFICATE OF PUBLIC UTILITY

- Allows a city to request the TNRCC to revoke the certificate of convenience and necessity (CCN) of a public utility if it finds that the utility has never provided, is no longer providing, or has failed to provide continuous and adequate service, or if the utility has been grossly or continuously mismanaged or grossly or continuously noncompliant with state law or TNRCC rules. If the CCN is revoked, the city must operate the utility and request TNRCC approval to acquire the utility at fair market value. (§13.2541, Water Code)

ARTICLE 10. WATER UTILITY SYSTEMS

- Amends multiple provisions in Chapter 13, Water Code, relating to requirements for water utilities regarding rate making, billing procedures, disclosure of related interests, regional consolidation of rates. (§§13.137, 13.144, 13.145, 13.182, 13.183, 13.187, and 13.343, Water Code)

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ARTICLE 11. MISCELLANEOUS PROVISIONS

- Provides that property subject to a permit or a plat in one city's extraterritorial jurisdiction (ETJ) may not be subjected to new or additional water pollution regulations if the property is transferred to another city's ETJ. (§26.177, Water Code)
- Prohibits a local government, except for the Edwards Aquifer Authority, from adopting regulations or ordinances that impose standards for underground petroleum storage tanks, since there is a unified and statewide program for groundwater and surface water protection relating to underground storage tanks. (§26.359, Water Code)
- Prohibits the TNRCC from authorizing injection wells into or through the Edwards Aquifer. (§27.051, Water Code)
- Updates statute that provides a population bracket to exempt certain water wells from district regulation. (§36.121, Water Code)

ARTICLE 12. NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY

- Modifies the enabling statute of the authority regarding the authority's contractual powers.

ARTICLE 13. REPORTS, REPEALER; TRANSITION; VALIDATION; EFFECTIVE DATE