



**Texas Water Development Board
Special Report**

**Water Conservation
Implementation Task Force
Report to the 79th Legislature**

November 2004

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Texas Water Development Board

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Water Conservation Implementation Task Force

According to the 2002 State Water Plan, current levels of water supply in Texas will fall short of meeting the state's projected annual demand for water in the year 2050, if drought conditions exist, by an estimated 7.5 million acre/feet. Droughts are a recurring theme in Texas, and a projected shortfall of these dimensions would have devastating effects on the Texas economy. Addressing this projected shortfall presents an extraordinary challenge for the citizens of Texas.

The 2002 State Water Plan recognizes conservation-based water management as one of the most effective strategies to help meet this challenge and ensure that the future water needs of Texans are met. Recommended and required water conservation programs and measures in the 2002 State Water Plan are projected to result in savings of approximately two million acre/feet of water per year by 2050. As a result of the passage of SB 2 in 2001, the second round of regional and state water planning involves assessing additional opportunities for conservation-based water management strategies to meet an even greater share of projected water demands.

In 2003, in an effort to realize water conservation's full potential, the 78th Texas Legislature created the Water Conservation Implementation Task Force via enactment of Senate Bill 1094. "I believe that the work of the Water Conservation Implementation Task Force will help us implement the State Water Plan," says Texas State Senator Robert Duncan, author of SB 1094. "Region by region, many people have worked very hard to establish this plan. Conservation is a key component of that plan, and we must continue to work toward that goal."

The Water Conservation Implementation Task Force drew strength and inspiration from the Legislature's commitment to moving the implementation of water conservation to the next level in Texas and is heartened by House Natural Resources Committee Chairman Robert Puente's comments that its efforts will help Texas achieve this goal. "The work of the Water Conservation Implementation Task Force has been instrumental in developing the tools we need to ensure optimum utilization of water conservation to meet Texas' future needs," says Chairman Puente.

On September 27th, 2004 the Task Force Members unanimously approved the final Report to the Legislature and the final Best Management Practices Guide. The Water Conservation Implementation Task Force respectfully submits to the 79th Texas Legislature this report, consisting of a review and evaluation of optimal levels of water-use efficiency and conservation for the state and recommendations resulting from this review and evaluation.



J. Kevin Ward,
Presiding Officer

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I – EXECUTIVE SUMMARY

This report by the Water Conservation Implementation Task Force (Task Force) is a strong endorsement of the proposition that effective and efficient utilization of voluntary water conservation, including water reuse, will be critical if the water-supply needs of future generations of Texans are to be met. The Task Force proposes a number of integrated actions and recommendations in this report that will, if adopted, provide a solid foundation for fully implementing the water conservation strategies adopted in current and future State Water Plans.

The Executive Summary includes brief discussions of the rationale for establishing the Task Force; the recommendations, actions, and draft legislation proposed by the Task Force; and what the Task Force believes should be the measure of its success.

Background/Rationale

The 2002 State Water Plan, which reflects cumulative effects of the 16 regional water plans, recognizes water conservation for its potential to extend existing supplies, reduce consumer costs, and meet wildlife, environmental, and other natural-resource needs. In addition, water conservation, including water reuse, may provide economical alternatives to more expensive water-supply solutions, such as reservoirs and well fields.

According to the 2002 State Water Plan, the inability of current water sources to meet demands for water during drought conditions will increase from 2.4 million acre-feet per year (AFY) in 2000 to an estimated 7.5 million AFY in 2050. Total water conservation as reflected in the 2002 State Water Plan will save approximately two million AFY by 2050—a significant sum and a vital element of the state’s plan to address the projected 7.5 million AFY shortfall. Of this total, the expected savings due solely to more efficient plumbing fixtures is approximately 976,000 AFY.² Water conservation strategies included in the 2002 State Water Plan make up the remaining approximately 1 million AFY. Of this amount, approximately 867,000 AFY is expected to be saved by agricultural conservation projects, with approximately 68,000 AFY conserved by municipal projects. In many instances, however, these strategies and the manner in which they are to be implemented are not clearly defined. Regional Water Planning Groups (Planning Groups) expressed difficulty in the first round of regional water planning in developing a science-based evaluation for the implementation of water conservation strategies. This difficulty hindered their ability to cost compare conservation measures in an “apples-to-apples” manner with more conventional strategies of water development. It should be noted that even with aggressive implementation, the most optimistic prediction of conservation strategies will not be enough to fully close this gap. Future plans must include additional water management strategies to eliminate this shortfall.

In 2003, the 78th Texas Legislature considered a broad spectrum of issues related to water conservation and established the Water Conservation Implementation Task Force via passage of Senate Bill (SB) 1094.

² Senate Bill 587, 72nd Texas Legislature, 1991

The Task Force was directed in SB 1094 to review, evaluate, and recommend optimum levels of water-use efficiency and conservation for Texas and to concentrate on issues related to (1) best-management practices, (2) implementation of conservation strategies contained in regional water plans, (3) a statewide public-awareness program, (4) state funding of incentive programs, (5) goals and targets for per-capita water use considering climatic and demographic differences, and (6) evaluation of state oversight and support of conservation.

In addition, SB 1094 directed the Task Force to develop a best-management practices guide (BMP Guide) for use by Planning Groups and political subdivisions responsible for water-delivery service. The BMP Guide is a document developed separately by the Task Force.

Tasks and Recommendations

The challenge before the Task Force was to develop recommendations that would facilitate and encourage, to the greatest extent practicable, the implementation of appropriate water conservation measures by municipalities, industry, and agricultural interests. The Task Force makes a number of recommendations that it believes will greatly enhance the ability and desire of Texans to implement water conservation strategies to meet their water-supply needs. These tasks and recommendations are summarized here according to task, and each individual recommendation is described in the report.

(Task 1) Best-Management Practices Guide

The Task Force developed a BMP Guide consisting of 21 municipal, 14 industrial, and 20 agricultural BMPs. The practices contained in the BMP Guide are voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and that can be implemented within a specified timeframe. The BMPs are not exclusive of other meaningful conservation techniques that an entity might use in formulating a state-required water conservation plan. At the discretion of each user, BMPs may be implemented individually, in whole or in part, or combined with other BMPs or other water conservation techniques to form a comprehensive water conservation program. The adoption of any BMP is entirely voluntary, although it is recognized that once adopted, certain BMPs may have some regulatory aspects to them (e.g., implementation of a local city ordinance).

The Task Force firmly believes that applying a mandatory set of BMPs throughout Texas would **not** be appropriate. One size does not fit all in a state characterized by wide variations in climate, geography, municipal demographics, water utility and service profiles, and agricultural and industrial needs. State policies adopted to guide the implementation of water conservation, including water reuse, in Texas must acknowledge the fundamental decision-making primacy and prerogative of Planning Groups, municipalities, industrial and agricultural water users, and water providers.

(Task 2) Evaluation of Regional Implementation of Water Conservation Strategies

On behalf of the Task Force, the Texas Water Development Board conducted a survey and evaluation of the implementation of water conservation (which includes water-reuse strategies) recommended in the adopted 2001 Regional Water Plans. The survey indicates that

- Water User Groups (WUGs) consider water conservation, including water reuse strategies, a practical and cost-effective way of extending existing water supplies to meet growing needs,
- There is a need for implementation of these strategies, and
- Lack of adequate funding poses a significant barrier to full implementation of these strategies by 2010.

(Task 3) Statewide Public-Awareness Program

The Task Force recommends that the state create and fund a Statewide Public-Awareness Program for water conservation, including water reuse. The program, consisting of a design, scope, and budget comparable to those of the highly successful *Don't Mess with Texas* highway antilitter campaign, would cost an estimated \$10 million in the first year, \$6.7 million in the second year, and approximately \$5.7 million per year in subsequent years. The Task Force believes that a statewide program will greatly complement and reinforce other local and regional programs and activities. The Task Force views a Statewide Public-Awareness Program as the foundation of the integrated actions and recommendations presented in this report and essential to realizing the greatest potential of many of the other recommendations.

The Task Force expressed unanimous support for the Statewide Public-Awareness Program concept and was able to secure financial assistance from public and private sources in the amount of \$150,000 to complete important initial market research in time for the 79th Texas Legislative Session. Donations supporting this research were channeled through TWDB's Water Assistance Fund.³ The Task Force believes that this research, consisting of quantitative statewide surveys and analysis of information gleaned from select focus groups, will be of great value to the 79th Texas Legislature as it deliberates funding of the complete program.

(Task 4) State Funding of Incentive Programs

The Task Force unanimously supported the proposition that there is a role for state funding of incentive programs to support the implementation of best-management practices and water conservation strategies including water reuse. The Task Force recommends that the Texas Legislature consider

- (1) Authorizing up to 16 Regional Conservation Coordinator (RCC) staff positions at TWDB to work directly with Planning Groups and water-supply entities in the regions,

³ See Appendix C

- (2) Recognizing exceptional water conservation efforts through a state and regional awards program,
- (3) Funding a limited grants program through TWDB to foster implementation and increased knowledge of innovative water conservation initiatives,
- (4) Funding a cost-share program through the Texas State Soil and Water Conservation Board to promote development and implementation of water conservation plans for irrigated agriculture, and
- (5) Continuing funding of the State Brush-Control Program at current or expanded levels.

(Task 5) Targets and Goals for Per-Capita Water Use

The Task Force developed and recommends a standardized methodology for determining total gallons per capita per day (gpcd) water use and residential gpcd water use. Total gpcd is herein defined as the total amount of water diverted and/or pumped for potable use divided by total population. Indirect-reuse-diversion volumes shall be credited against total diversion volumes for the purpose of calculating gpcd for targets and goals.

Residential gpcd is herein defined as single-family plus multifamily consumption divided by the total population. Application of this methodology is intended to establish gpcd water-use benchmarks for tracking purposes and to evaluate effectiveness of conservation measures subsequent to their implementation. Modifications are being developed for the TWDB annual Water-Use Survey that will result in collection of data needed to consistently calculate total and residential gpcd.

The Task Force recognizes that a simple comparison of per-capita water use among Texas municipal water providers that may have significant differences in climate, geography and source water characteristics, as well as in their service and population profiles may, without additional data and analysis, lead to inaccurate conclusions about comparative water use efficiencies among those municipal water providers.

In addition, the Task Force adopted recommended gpcd targets and goals that should be considered by retail public water suppliers when they develop water conservation plans required by the state, as follows

(1) All retail public water suppliers that are required to prepare and submit water conservation plans should establish targets for water conservation, including specific goals for per-capita water use and for water loss programs using appropriate water conservation best-management practices (BMPs) or other water conservation techniques to achieve their targets and goals in an effort to increase efficiency in water use and achieve conservation as defined in Chapter 11 of the Texas Water Code.

(2) Municipal Water Conservation Plans required by the state shall include per capita water-use goals.

- a) An entity required to file such a plan should develop its per capita water use goals using the following methodology:
- (i) Obtain the last five years, annual gpcd total per capita water use, if available;
 - (ii) Project water supply requirements for the next ten years using information such as population trends, historical water use, and economic growth;
 - (iii) Consider the efficiencies and savings that the entity anticipates it can achieve by utilizing the appropriate best management practices or water conservation techniques that it chooses to implement to meet its targets and goals; and
 - (iv) Using the information above, establish per capita water use goals for the next five- and ten-year periods, taking into consideration, among other things, state and regional targets and goals, local climate, demographics, and service profile.
- b) A Municipal Water Conservation Plan also must
- (i) Include methods to track annual water use and to develop information sufficient to evaluate the conservation strategies that have been implemented;
 - (ii) Include a plan to measure progress annually and, at a minimum, evaluate the progress toward meeting the target and goals every five years;
 - (iii) At a minimum, re-establish updated targets and goals every five years; and
 - (iv) Following notice and hearing, be adopted at an open meeting.
- c) Targets and goals established by an entity should also consider
- (i) A minimum annual reduction of one percent in total gpcd, based upon a five-year rolling average, until such time as the entity achieves a total gpcd of 140 or less.
 - (ii) A statewide goal to reduce total statewide water demand to an average of 140 gpcd; and

- (iii) Any guidelines that may be adopted by the SB-1 Regional Water Planning Group in which the entity developing the Municipal Water Conservation Plan is located.

(3) The State, through the Texas Water Development Board, will

- (i) Seek to achieve its goal of a reduction of total statewide water demand to an average of 140 gpcd through average annual reductions of one percent per year; and
- (ii) Work with manufacturers of water-using equipment, water utilities, water users, and others to reduce overall statewide indoor water use to 50 gpcd through education, research, and funding programs.

In considering water conservation targets and goals, the Task Force also adopted a recommendation that the goal of a Municipal Water User Group with unmet water needs in the applicable Regional Water Plan should be first to meet or reduce that need using advanced water conservation techniques, including any appropriate BMPs or other water conservation strategies selected by the Water User Group. As used here, the term “advanced water conservation techniques” means conservation techniques that go beyond implementation of the state plumbing fixture requirements and beyond adoption and implementation of water conservation education programs.

(Task 6) Evaluation of State Oversight and Support of Conservation

The Task Force recommends that the Texas Legislature consider making necessary statutory changes to further water conservation practices. Specific proposed legislative changes are provided in Section VI. The proposed changes should

- (1) Require all retail public water suppliers serving a population of 3,300 or more to develop a water conservation plan based on specific targets and goals and utilizing appropriate BMPs or other conservation techniques. The affected retail public water suppliers should be required to (a) submit the water conservation plans to TWDB for review and approval and (b) annually report the progress of their program to TWDB;
- (2) Ensure that water users that are subject to TCEQ requirements for water conservation plans and/or TWDB financial assistance requirements for water conservation plans report annually to TWDB on the progress of their program;
- (3) Authorize TWDB to refer systems in noncompliance with the reporting requirements described in 1 and 2 to the TCEQ and authorize TCEQ to institute administrative remedies for failure to meet these plan submittal and reporting requirements; and
- (4) Direct TWDB, when considering applications for loans/grants from the Water Development Fund for implementation of water-supply projects in the State Water Plan, to give priority to applications by entities that have (a) already demonstrated significant

water conservation savings or (b) through implementation of proposed project, will achieve significant conservation savings.

In addition, the Task Force recommends that the Texas Legislature consider

- (5) Creating a standing Water Conservation Advisory Council (Council) to advise the Texas Legislature, TWDB, TCEQ, other state agencies, water suppliers and other political subdivisions, and the public on matters regarding water conservation. Activities that the Council should routinely pursue include the monitoring of (a) trends in water conservation implementation, (b) new technologies for possible inclusion as BMPs in future updates to the BMP Guide, (c) effectiveness of the statewide public-awareness program and associated local involvement in implementation of the program, (d) development of a State Water Management Resource Library, (e) effectiveness of public recognition programs, (f) methods to encourage and facilitate implementation of water conservation strategies by all water users, and (g) target and goal guidelines to be considered by TCEQ and TWDB; and
- (6) Supporting the development of an interactive, Internet-based database system to facilitate storage and review of information related to water conservation plans and their implementation.

Additional Recommendations

The Task Force developed additional recommendations that are not explicitly related to its duties as stated in SB 1094 but which it deemed relevant to the overall issue of water conservation implementation in Texas, as follows:

- (1) Toilet Performance Standards—The Task Force recommends passage of legislation establishing performance standards for toilets to ensure that toilets sold in the state cannot be retrofitted so that they waste water.
- (2) State Water Management Resource Library—The Task Force recommends establishment of a Water Management Resource Library for Texas.
- (3) Continued Funding of State Conservation Programs—The Task Force supports the continued funding of state and federal grants for water conservation.
- (4) Continued Funding of Conservation Research and Education Programs—The Task Force recognizes the role of the Texas Agricultural Experiment Station, Texas Cooperative Extension, and state universities in developing and evaluating water conservation technologies, management practices, and policies, as well as providing educational programs designed to encourage conservation.
- (5) Land Stewardship — The Task Force endorses land stewardship as a conservation strategy and recognizes watershed management as an important and significant long-term water management strategy.

- (6) Take or Pay Contracts — The Task Force recommends establishing an interim study to examine the impacts, if any, of “take or pay” contracts on efforts to achieve water conservation and to make appropriate recommendations based on the findings of that examination.
- (7) PET Network — The Task Force recommends expanding funding of Texas A&M University System’s potential evapotranspiration (PET) network in order that more weather stations are online and a larger number of water users can use evapotranspiration (ET) to determine adequate levels of water to meet outdoor water demands.
- (8) Coordinate Rules Regarding Conservation and Distribution System Requirements — The Task Force recognizes the potential need to coordinate water conservation goals with the variance process for establishing alternative minimum pumping capacity of distribution systems pursuant to 30 TAC Chapter 290.45.
- (9) Provide Protection from Cancellation of Water Rights Due to Conservation — The Task Force recommends protecting that portion of a water right associated with water saved because of the implementation of a water conservation project or a best-management practice from cancellation due to nonuse.
- (10) Residential End-Use Studies — The Task Force recommends conducting “end-use” studies to provide more accurate data about the current residential water demand in various regions of the state.
- (11) Provide Assistance in Bridging Conservation Funding Gaps — The Task Force recommends assisting communities to bridge potential funding gaps associated with water conservation efforts.
- (12) Provide Additional Funding for Water Use Data — The Task Force recommends providing additional funding for additional collection, review, analysis, and dissemination of data on water use in Texas.

Measure of Success

The true measure of the Task Force’s success in accomplishing its duties will be whether water conservation strategies are implemented in Texas that enable the state to meet water-supply challenges facing Texas over the next 50 years and beyond. Meeting these challenges will require directly linking water resource planning, strategy development, and strategy implementation. The Task Force went to great lengths to consider this linkage in developing this report and the BMP Guide. It is the Task Force’s collective and sincere hope that the contents and spirit of this report and the BMP Guide result in actual, permanent, and substantial water savings to help Texas meet its future water needs.

Figure 1: Map of the Regional Water Planning Areas



II – INTRODUCTION

Dating back to 1917, Texas has had a long history of addressing water conservation. Initially, and for many years, the idea of conservation meant development of water resources such as reservoir projects. In 1985, the definition of conservation was amended to include reducing water consumption, reducing waste, improving efficiency in the use of water, and increasing the recycling and reuse of water. SB 1, the omnibus water legislation passed in 1997, contained water conservation provisions requiring all major water-rights holders (municipal and industrial rights of 1,000 acre-feet or more per year and irrigation rights of 10,000 acre-feet or more per year) to develop, submit, and implement water conservation plans. The Texas Legislature passed numerous water conservation bills in 2003, including establishment of the Water Conservation Implementation Task Force.

The 2002 State Water Plan documents a 22-gpcd savings from year-2000 rates of municipal use by 2050, resulting primarily from continued implementation of more efficient plumbing code requirements. These water conservation measures are projected to save an estimated 976,000 AFY by 2050.

With the passage of SB 1094 in 2003, the Texas Legislature created the Water Conservation Implementation Task Force. In SB 1094, the Legislature directed the Task Force to review, evaluate, and recommend optimum levels of water-use efficiency and conservation for the state. In addition, the Legislature directed the Task Force to develop a BMP Guide for use by Planning Groups and political subdivisions responsible for water-delivery service.

This report and the BMP Guide are tangible results of the Task Force’s efforts to fulfill its duties under SB 1094. The Task Force agrees with and supports Chairman Robert Puente’s assessment of these results: “The work of the Water Conservation Implementation Task Force has been instrumental in developing the tools we need to ensure optimum utilization of water conservation to meet Texas’ future needs.”

Membership Selection

The Texas Legislature directed TWDB to select individuals who would be willing to serve voluntarily on the Task Force. TWDB was careful to do so in a manner that was consistent with the Legislature’s expressed intent—that the members “represent the following entities and interest groups from applicants recommended by the following:

- (1) Texas Commission on Environmental Quality;
- (2) Texas Department of Agriculture;
- (3) Texas Parks and Wildlife Department;
- (4) Texas State Soil and Water Conservation Board;
- (5) Texas Water Development Board;
- (6) regional water planning groups;
- (7) federal agencies;
- (8) municipalities;

- (9) groundwater conservation districts;
- (10) river authorities;
- (11) environmental groups;
- (12) irrigation districts;
- (13) industries;
- (14) institutional water users;
- (15) professional organizations focused on water conservation; and
- (16) higher education.”

In June 2003, the TWDB contacted a large number of water conservation and water-supply planning entities and organizations to solicit their nominations for membership on the Task Force, and by the end of July 2003 the TWDB had received 89 nominations. TWDB evaluation of the nominees was based on a number of factors, including nominees’ demonstrated knowledge of water conservation issues, water-planning experience, commitment to serve, and ability to enhance the group’s overall cultural and geographic diversity.

On September 17, 2003, after considerable input from a large number of water conservation and water-supply planning entities and organizations, TWDB approved 32 individuals to serve on the Task Force. A number of individuals approved for membership provided expertise in various areas and were capable of representing more than 1 of the 16 entities and/or interests enumerated in SB 1094. In terms of geographic diversity, 15 of the 16 Regional Water Planning Areas are represented by at least 1 member on the Task Force.

TWDB is confident that the selection process and composition of the Task Force membership meet the spirit and expressed intent of SB 1094. Summary biographical information on each of the 32 members of the Task Force can be reviewed in Appendix B.

Organization of Work

The Task Force was directed by the Texas Legislature in SB 1094 to review, evaluate, and recommend optimum levels of water-use efficiency and conservation for the state by

- (1) Identifying, evaluating, and selecting best-management practices (BMPs) for municipal, industrial, and agricultural water uses and evaluating the costs and benefits for the selected best-management practices;
- (2) Evaluating the implementation of water conservation strategies recommended in Regional and State Water Plans;
- (3) Considering the need to establish and maintain a statewide public -awareness program for water conservation;
- (4) Evaluating the proper role, if any, for state funding of incentive programs that may facilitate the implementation of best-management

practices and water conservation strategies;

- (5) Advising the TWDB and TCEQ on
 - (A) a standardized methodology for reporting and using per-capita water-use data;
 - (B) establishing per-capita water-use targets and goals, accounting for such local effects as climate and demographics; and
 - (C) other possible uses as appropriate; and
- (6) Evaluating the appropriate state oversight and support of any conservation initiatives adopted by the Legislature.

The Task Force did its best to remain focused by continually referring to provisions of SB 1094. The work of the Task Force was organized into six tasks numbered in a manner consistent with the sequence of duties enumerated in Section 3 of SB 1094.

The six tasks are identified in this document as

- Task One: Best-Management Practices Guide
- Task Two: Evaluation of Regional Implementation of Water Conservation Strategies
- Task Three: Statewide Public-Awareness Program
- Task Four: State Funding of Incentive Programs
- Task Five: Targets and Goals for Per-Capita Water Use
- Task Six: Evaluation of State Oversight and Support of Conservation

In SB 1094, the Legislature directed the Task Force to develop a guide that would identify, evaluate, and select best-management practices (BMPs) for municipal, industrial, and agricultural water uses. The Task Force took its cue from the Legislature and recognized the potential value of utilizing these three sectors of water uses in the broader context of many of its duties under SB 1094. From its own membership, the Task Force formed municipal, industrial, and agricultural subgroups, which were responsible for initial development of BMP lists for a particular water-use sector. In addition, subgroups were responsible for identifying issues relevant to a sector vis-à-vis full Task Force consideration of Tasks One, Two, Four, and Five. Tasks Three and Six were considered solely by the full membership of the Task Force.

The Task Force agreed that all substantive decisions and/or recommendations made by the subgroups were to be reported back to the full membership for their consideration and final disposition. Formation of the subgroups provided a helpful focus on the issues and had the added benefit of achieving a voluntary division of labor based on individual member expertise and interest. Task Force members were encouraged to serve on as many subgroups as they wished, and many served on more than one subgroup.

The operational approach adopted and practiced by the Task Force included

- (1) Holding agenda-driven, all-day meetings of the full Task Force at a location in or near Austin at least once a month beginning in September 2003. (The Task Force held

- monthly meetings between September 2003 and September 2004, except for December 2003 owing to holiday-season scheduling difficulties),
- (2) Holding subgroup meetings or discussions as needed in person and/or via teleconference or the Internet,
 - (3) Pursuing consensus on substantive decisions made by the full Task Force but accepting the passage of motions by a majority vote on the basis of affirmation by two-thirds of the voting Task Force members present, and
 - (4) Agreeing that Task Force meetings would be posted and open to the public and provide an opportunity for public comment.

The Task Force adopted the following working definition of *conservation*:

“Those practices, techniques, programs, and technologies that will protect water resources, reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.”

Task Force adoption of a working definition for *conservation* was not intended to serve as a recommendation that the Legislature consider changing the existing definition of *conservation* in the Texas Water Code but to serve as an aid to the reader in understanding what is meant by the term *conservation* in this report.

III – TASKS AND ASSOCIATED RECOMMENDATIONS

This chapter is divided into six primary sections. The six sections are assigned a task number from one to six and arranged in a sequence reflecting duties enumerated in SB 1094.

TASK ONE: BEST-MANAGEMENT PRACTICES

Identifying, evaluating, and selecting best-management practices for municipal, industrial, and agricultural water uses and evaluating the costs and benefits for the selected best-management practices.

Introduction

The 2002 State Water Plan documents that the current water supply will be unable to meet the demand for water over the next 50 years during extended periods of drought. The 2002 State Water Plan projects that continuous improvement of conservation practices and strategies is expected to reduce per-capita municipal water demand by 22 gallons per capita per day (gpcd) from a statewide average of 181 gpcd in 2000 to 159 gpcd in 2050. This projected reduction in municipal demand is due largely to statewide implementation of more efficient plumbing-fixture codes established by state and federal law.

Total water conservation as reflected in the 2002 State Water Plan will save approximately two million AFY by 2050—a significant sum and a vital element of the state’s plan to address the projected 7.5 million AFY shortfall. Of this total, the expected savings due solely to more efficient plumbing fixtures is approximately 976,000 AFY. Water conservation strategies included in the 2002 State Water Plan make up the remaining approximately one million AFY. Of this, approximately 867,000 AFY is expected to be saved by agricultural conservation projects, with approximately 68,000 AFY conserved by municipal projects.

The 2002 State Water Plan contains limited specificity in many cases regarding conservation strategies, implementation strategies, cost estimates of water savings, cost effectiveness, public acceptance, or impact on water and wastewater facility plans, rates and revenues, or the environment. Regional planning groups listing water conservation as a means of meeting future identified water shortages expressed difficulty in obtaining information about the elements of successful conservation programs, good cost estimates, and reliable water savings estimates in water resource planning.

In developing the BMP Guide, the Task Force intended to provide a means by which all users of the BMP Guide could derive the information listed in the previous paragraph.

The BMP Guide is intended for use as a resource for

- Planning Groups
- Water providers, including political subdivisions responsible for water delivery service and for developing and implementing water conservation plans.
- Municipal, agricultural, or industrial water users when developing water conservation plans in response to local or regional needs.

Although the Task Force has attempted to provide a wide variety of options, local factors may dictate that practices not listed in this document or some variation of a listed practice would be more appropriate to some areas. In such cases, the structure of these BMPs may serve as a template and guide for development of local plans. Public acceptance is an essential component of success in water conservation.

For example, the Task Force adopted a set format for water conservation BMPs that includes several essential components: a specific practice for which there is science-based or field-based evidence of success, a quantified amount of water savings or a method for deriving that amount, a specific time frame for implementation, an evaluation method, and a cost-efficiency analysis.

Several of these practices involve measurement rather than actual conservation practice. Measurement is the essential initial and final determination of the effectiveness of the practice. Experience has shown that in many cases, the act of measuring alone brings awareness that leads to more efficient water-use practices.

Limitations of the BMP Guide

The BMP Guide is not a regulatory document. Strategies in the BMP Guide use existing technology and practices generally accepted by Task Force conservation experts to have been effective in water conservation programs.

The Guide is not a design manual; instead, it provides overviews of a number of BMPs and directs the user to relevant design and certification manuals, where appropriate. As technological advances occur, the BMP Guide will need to be updated to remain current with state-of-the-art practices.

Practices included in the BMP Guide incorporate latest technologies, as well as lessons learned from water conservation practices field-tested according to municipal, industrial, and agricultural interests. The Task Force envisions the BMP Guide as simply the first step in the development of a comprehensive and dynamic resource library. The resource library should include not only BMPs (subject to routine updating, modification, and revision as new data and technologies become available), but also actual, documented conservation case studies, technical papers on water-use technologies, public policy information, and water conservation planning information. To be most useful, the library should be online, and procedures should be defined to accept additions and revisions to the library. The Task Force suggests that the proposed Water Conservation Advisory Council take a leading role in this ongoing endeavor of building a water conservation information resource that will continue to serve the needs of the people of Texas.

Specific best-management practices contained in the BMP Guide include

BMPs FOR MUNICIPAL WATER USERS:

- 2.1 SYSTEM WATER AUDIT AND WATER LOSS
- 2.2 WATER CONSERVATION PRICING
- 2.3 PROHIBITION ON WASTING WATER
- 2.4 SHOWERHEAD, AERATOR, AND TOILET FLAPPER RETROFIT

- 2.5 RESIDENTIAL ULTRA-LOW-FLOW TOILET REPLACEMENT PROGRAMS
- 2.6 RESIDENTIAL CLOTHES WASHER INCENTIVE PROGRAM
- 2.7 SCHOOL EDUCATION
- 2.8 WATER SURVEY FOR SINGLE-FAMILY AND MULTI-FAMILY CUSTOMERS
- 2.9 LANDSCAPE IRRIGATION CONSERVATION AND INCENTIVES
- 2.10 WATER-WISE LANDSCAPE DESIGN AND CONVERSION PROGRAMS
- 2.11 ATHLETIC FIELD CONSERVATION
- 2.12 GOLF COURSE CONSERVATION
- 2.13 METERING OF ALL NEW CONNECTIONS AND RETROFITTING OF EXISTING CONNECTIONS
- 2.14 WHOLESALE AGENCY ASSISTANCE PROGRAMS
- 2.15 CONSERVATION COORDINATOR
- 2.16 REUSE OF RECLAIMED WATER
- 2.17 PUBLIC INFORMATION
- 2.18 RAINWATER HARVESTING AND CONDENSATE REUSE
- 2.19 NEW CONSTRUCTION GRAYWATER
- 2.20 PARK CONSERVATION
- 2.21 CONSERVATION PROGRAMS FOR INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL ACCOUNTS

BMPs FOR INDUSTRIAL WATER USERS:

- 3.1 INDUSTRIAL WATER AUDIT
- 3.2 INDUSTRIAL WATER WASTE REDUCTION
- 3.3 INDUSTRIAL SUBMETERING
- 3.4 COOLING TOWERS
- 3.5 COOLING SYSTEMS (OTHER THAN COOLING TOWERS)
- 3.6 INDUSTRIAL ALTERNATIVE SOURCES AND REUSE OF PROCESS WATER
- 3.7 RINSING/CLEANING
- 3.8 WATER TREATMENT
- 3.9 BOILER AND STEAM SYSTEMS
- 3.10 REFRIGERATION (INCLUDING CHILLED WATER)
- 3.11 ONCE-THROUGH COOLING
- 3.12 MANAGEMENT AND EMPLOYEE PROGRAMS
- 3.13 INDUSTRIAL LANDSCAPE
- 3.14 INDUSTRIAL SITE-SPECIFIC CONSERVATION

BMPs FOR AGRICULTURAL WATER USERS:

- 4.1 AGRICULTURAL IRRIGATION WATER-USE MANAGEMENT
 - 4.1.1 IRRIGATION SCHEDULING
 - 4.1.2 VOLUMETRIC MEASUREMENT OF IRRIGATION WATER USE
 - 4.1.3 CROP RESIDUE MANAGEMENT AND CONSERVATION TILLAGE
 - 4.1.4 ON-FARM IRRIGATION AUDIT
- 4.2 LAND-MANAGEMENT SYSTEMS

- 4.2.1 FURROW DIKES
- 4.2.2 LAND LEVELING
- 4.2.3 CONTOUR FARMING
- 4.2.4 CONVERSION OF SUPPLEMENTAL IRRIGATED FARMLAND TO DRY-LAND FARMLAND
- 4.2.5 BRUSH CONTROL/MANAGEMENT
- 4.3 ON-FARM WATER-DELIVERY SYSTEMS
 - 4.3.1 LINING OF ON-FARM IRRIGATION DITCHES
 - 4.3.2 REPLACEMENT OF ON-FARM IRRIGATION DITCHES WITH PIPELINES
 - 4.3.3 LOW-PRESSURE CENTER PIVOT SPRINKLER IRRIGATION SYSTEMS
 - 4.3.4 DRIP/MICRO-IRRIGATION SYSTEM
 - 4.3.5 GATED AND FLEXIBLE PIPE FOR FIELD-WATER DISTRIBUTION SYSTEMS
 - 4.3.6 SURGE FLOW IRRIGATION FOR FIELD-WATER DISTRIBUTION SYSTEMS
 - 4.3.7 LINEAR-MOVE SPRINKLER IRRIGATION SYSTEMS
- 4.4 WATER DISTRICT DELIVERY SYSTEMS
 - 4.4.1 LINING OF DISTRICT IRRIGATION CANALS
 - 4.4.2 REPLACEMENT OF IRRIGATION DISTRICT CANALS AND LATERAL CANALS WITH PIPELINES
- 4.5 MISCELLANEOUS SYSTEMS
 - 4.5.1 TAILWATER RECOVERY AND REUSE SYSTEM
 - 4.5.2 NURSERY PRODUCTION SYSTEMS

Recommendation #1—BMPs are Voluntary

Best-management practices contained in the BMP Guide are voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and can be implemented within a specified timeframe. The BMPs are not exclusive of other meaningful conservation techniques that an entity might use in formulating a state-required water conservation plan. At the discretion of each user, BMPs may be implemented individually, in whole or in part, or be combined with other BMPs or other water conservation techniques to form a comprehensive water conservation program. The adoption of any BMP is entirely voluntary, although it is recognized that once adopted, certain BMPs may have some regulatory aspects to them (e.g., implementation of a local city ordinance).

The Task Force unanimously agreed that the BMP Guide must be in accordance with the state's philosophy of region-based water planning. The Task Force firmly believes that applying a mandatory set of BMPs throughout Texas would **not** be appropriate. One size does not fit all in a state characterized by wide variations in climate, geography, municipal demographics, water utility and service profiles, and agricultural and industrial needs. State policies adopted to guide the implementation of water conservation, including water reuse, in Texas must acknowledge the fundamental decision-making primacy and prerogative of Planning Groups, municipalities, industrial and agricultural water users, and water providers.

The Task Force understands that a question has arisen as to how the BMP Guide might relate to the water conservation criteria to be used by TCEQ in reviewing and acting on applications for interbasin transfers of surface water. The Task Force believes that for purposes of action on an

interbasin transfer application the determination of what constitutes the “highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the applicant” is a matter to be decided by TCEQ on a case-by-case basis. The Task Force is not attempting through the BMP Guide or the water conservation targets or goals to make that determination.

TASK TWO: EVALUATION OF IMPLEMENTATION OF CONSERVATION STRATEGIES IN REGIONAL WATER PLANS

Evaluating the implementation of water conservation strategies recommended in Regional and State Water Plans.

Introduction

The 2002 State Water Plan indicates that the current water supply will not be able to meet the demand for water over the next 50 years. The 16 Planning Groups recommended that water conservation be utilized to meet the needs, at least partly, of 205 Water User Groups (municipal, industrial, and agricultural). The projected savings from the recommended conservation-based water management strategies are approximately one million AFY by 2050. In addition, the 2002 State Water Plan also projects that if implementation of known technology occurs on a continuing basis, another one million AFY of conservation savings may be realized by 2050. According to a volumetric comparison, approximately 13.5 percent of the water to meet needs in the Regional Water Plans will result from a variety of water conservation strategies other than reuse (Figure 2).

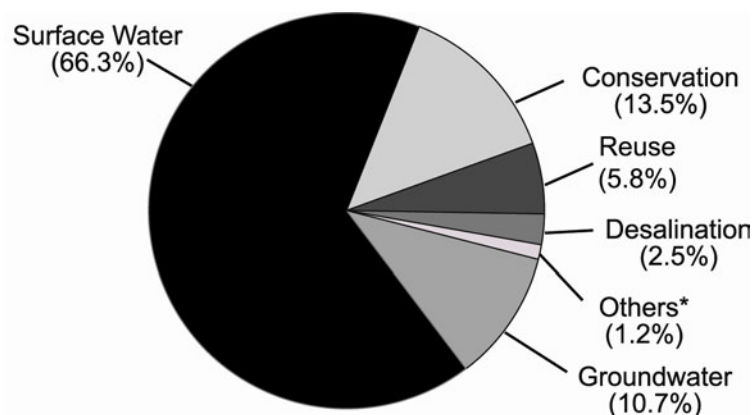
The Planning Groups expressed difficulty in the first round of regional water planning in developing a science-based evaluation for the implementation of water conservation strategies. With greater focus on conservation in the next round of planning and an aggressive implementation effort, the most optimistic prediction of conservation strategies will not be enough to fully close the 7.5-million-AFY gap. Future plans must include water management strategies to eliminate this shortfall.

On behalf of the Task Force, TWDB staff conducted a two-part survey to determine implementation of water conservation strategies, including water-reuse strategies, recommended in the adopted 2001 Regional Water Plans.

Implementation of Water Conservation Strategies Other Than Water Reuse

A survey was conducted to evaluate the status of implementation of water conservation strategies (other than water reuse) included in the 2001 Regional Water Plans and scheduled for completion by the year 2010 to produce water savings.

Figure 2: Water Management Strategies Source of Water to Meet Needs
(Source of Volumetric Comparison: Figure 8-2, Water for Texas, 2002)



*Others includes weather modification, brush control, aquifer storage and recovery, and contract renewals from systems with a mixed supply of groundwater and surface water.

Background

In the 2001 Regional Water Plans, a total of 613 Water User Groups (WUG's) show a water-supply need for 2010. In the 2001 Plans, 120 (19 percent) of the 613 WUG's with needs include water conservation as a water management strategy to meet those needs, either in whole or in part.

Survey Procedure

At the direction of the Task Force, TWDB staff conducted a survey of WUG's with water conservation strategies garnering in excess of 1,000 AFY in water savings. Strategies were considered to be in the process of implementation if there was tangible progress toward implementation (i.e., money budgeted, contracts, completed installations).

The accompanying table (Table 1) includes data from the surveys. Although the survey data are not 100-percent inclusive of all potential water conservation strategies, they do represent most of these strategies.

Surveys were conducted for 49 of the 51 WUG's with conservation strategies over 1,000 AFY. Two WUG's were not surveyed because of an inability to make contact with a representative of these WUG's.

Results

In the 2001 Regional Water Plans, eight of the Planning Groups did not include any water conservation strategies, other than reuse, for 2010 to meet identified water-supply needs; these include Regions A, B, C, D, E, I, J, and P. The other eight regions included a total of approximately 540,600 AFY of water conservation strategies. Of the 120 WUG's utilizing water conservation strategies, 51 included a conservation project(s) providing over 1,000 AFY in water savings.

Table 1: Water Conservation Strategies (> 1,000 AFY) in the 2001 Regional Water Plans Scheduled for Completion by 2010

Region	Water Conservation Strategies (in AFY)	Strategies Being Implemented (by Volume)	Strategies Being Implemented (by Percent)	Number of Strategies	Number of Strategies Not Surveyed	Number of Strategies Implemented
A						
B						
C						
D						
E						
F	46,088	39,910	87	9	1	7
G	3,695	2,200	60	2	0	1
H	41,051	39,975	97	6	1	5
I						
J						
K	117,996	117,996	100	9	0	9
L	67,088	67,088	100	7	0	7
M	103,446	103,446	100	9	0	9
N	2,388	1,226	51	2	0	1
O	158,832	158,832	100	7	0	7
P						
Total:	540,584	530,673	98	51	2	46

Respondents indicated that some form of activity is occurring for 46 of these strategies and that some level of implementation is present for about 98 percent of the conservation strategies by volume identified for 2010.

Implementation of Water-Reuse Strategies

A survey was conducted to evaluate the status of implementation of water-reuse strategies for 2010 included in the 2001 Regional Water Plans for those Water User Groups (WUGs) with a water-supply need.

Survey Procedure

At the direction of the Task Force, TWDB staff conducted a survey of the WUGs with water-reuse strategies. Strategies were considered to be in the process of implementation if there had been tangible progress (i.e., money budgeted, contracts, completed installations).

- (1) Attempts were made to contact all WUGs with reuse strategies. The WUGs were contacted by mail, by phone, or in person.
- (2) If the contact knew of a specific instance of reuse-strategy implementation, it was considered tangible progress.
- (3) If nothing had been done to address a reuse strategy, the contact was asked why, and replies were documented in a comments section.

The accompanying table (Table 2) includes data from the surveys on implementation of major water-reuse strategies providing water in 2010 or before. Although this survey included all reuse strategies, the table summarizes only reuse strategies over 1,000 AFY, to be consistent with the previously completed survey of conservation strategies other than reuse. Additional information regarding all strategies is discussed next.

Table 2: Water Reuse Strategies (> 1,000 AFY) in the 2001 Regional Water Plans Scheduled for Completion by 2010

Region	Water Reuse Strategies (in AFY)	Strategies Being Implemented (by volume)	Strategies Being Implemented (by percent)	Number of Strategies	Number of Strategies Implemented	Number of Strategies Not Surveyed
A	9,700	7,700	79	2	1	1
B						
C	66,744	66,244	99	23	19	2
D						
E	19,000	19,000	100	1	1	0
F	4,734	2,234	47	2	1	0
G	5,000	5,000	100	3	2	0
H	92,224	90,700	98	2	1	0
I						
J						
K	102,934	102,934	100	4	4	0
L	19,826	19,826	100	1	1	0
M	11,106	9,194	83	9	7	0
N	1,027	0	0	1	0	0
O						
P						
Total:	332,295	322,832	97	48	37	3

Surveys were conducted for 45 of the 48 WUGs with reuse strategies over 1,000 AFY. Three WUGs were not surveyed because of an inability to make contact with a knowledgeable source. Respondents indicated that some form of activity was occurring for 37 of these strategies and that some level of implementation had been completed for about 97 percent of the reuse strategies by volume identified for 2010.

Results

In the 2001 Regional Water Plans, a total of 613 WUGs show a water-supply need for 2010. In the 2001 Plans, 85 (14 percent) of these WUGs with needs chose to include water reuse as a water management strategy.

Six of the Planning Groups did not include any water-reuse strategies to meet identified water-supply needs. The other 10 Planning Groups included a total of about 332,300 AFY of water-reuse strategies for 2010. Of the 85 WUGs utilizing water-reuse strategies, 48 had a reuse

strategy providing over 1,000 AFY. However, these 48 WUGs do account for almost 97 percent of the total volume of water-reuse strategies for 2010.

Results for all reuse strategies, including those less than 1,000 AFY, indicate that implementation is under way for 97 percent by volume (68 of the 85 WUGs).

Summary

Several conclusions may be drawn from the information obtained in the water conservation and water-reuse strategy implementation surveys. It is encouraging that 46 of the 51 WUGs with major water conservation strategies and 68 of the 85 WUGs with water-reuse strategies scheduled for completion in 2010 have already begun some level of implementation. This level of implementation suggests that these WUGs consider water conservation, including water reuse, to be practical and cost-effective ways to address water-supply needs.

However, the fact that only about one in three WUGs with needs chose to implement water conservation and water-reuse strategies to meet those needs, in whole or in part, indicates that there is clearly a need for broader use of these strategies to meet water-supply needs. Approximately 26 percent of the WUGs that did not include conservation or reuse as a strategy are small systems with populations of less than 3,300. These small systems commonly do not have staffing adequate to do much more than keep the water flowing. In a subsequent section, Regional Conservation Coordinators will be recommended in order that these and other regional conservation issues be addressed. In addition, the survey results indicate that a lack of adequate funding poses a significant barrier to full implementation of these strategies by 2010.

TASK THREE: STATEWIDE PUBLIC-AWARENESS PROGRAM

Considering the need to establish and maintain a statewide public-awareness program for water conservation

Introduction

Adopted language:

Although there are many smaller, local water conservation programs in Texas, there is a clear need for a broad public-awareness campaign on water conservation, including water reuse, especially to support smaller cities and water utilities. An ongoing, statewide, water conservation awareness program will strengthen existing local water conservation programs and boost public awareness in areas of the state without local water conservation programs. SB 1094 recognized this issue and charged the Task Force with considering the need for such a program in Texas.”

At the October and November 2003 Task Force meetings, the Task Force discussed the need for a statewide public-awareness program. On November 24th, the Task Force unanimously agreed that a statewide program is needed.

Recommendation #2—Statewide Water Conservation Public-Awareness Program

The Task Force recommends that the state create and fund a Statewide Public-Awareness Program for Water Conservation (Program). The Program, consisting of a design, scope, and budget comparable to that of the highly successful *Don't Mess with Texas* highway antilitter campaign, would cost an estimated \$10 million in 2006/07, \$6.7 million in 2008, and \$5.7 million annually in the years 2009 through 2011. The Program would have primary statewide goals of making individual Texans aware of the importance of water conservation, including water reuse, to their future as residents of the state and to complement and reinforce other local and regional water conservation and water-reuse public-awareness programs and activities.

The Task Force was able to secure financial assistance from public and private sources in the amount of \$150,000 to complete important initial market research in time for the 79th Texas Legislative Session. Donations supporting this research were channeled through TWDB's Water Assistance Fund. The Task Force believes that this research, consisting of quantitative statewide surveys and analysis of information gleaned from select focus groups, will be of great value to the 79th Texas Legislature as it deliberates funding of the complete program.

The following detailed description of the Statewide Public-Awareness Program for Water Conservation was adopted unanimously by the Task Force:

**STATEWIDE PUBLIC-AWARENESS PROGRAM FOR
WATER CONSERVATION**

Adopted Description:

Overarching Message and Goals

The statewide conservation awareness program will focus on delivering a simple, enduring, universal *water awareness* message as opposed to a varying assortment of secondary messages endorsing specific, regional *conservation practices*. The basic 'product' that the statewide public-awareness program will 'sell' is the notion that water conservation is relevant to every Texan.

The overarching goal of the program will be to promote a fundamental, unifying awareness of the importance and relevance of water conservation to all Texans. The statewide program will strive to make all Texans aware that their natural water resources are limited and not immune to consequences of their individual behavior.

A secondary goal of the program will be to complement and reinforce local conservation programs. The statewide program will prime the average Texan to better appreciate and act upon conservation messages disseminated by their local political subdivisions. Identification and promotion of specific conservation practices appropriate to each region will remain the responsibility of local entities.

Overall Nature and Feel of the Public-Awareness Program

To be successful, the production value of materials associated with the awareness program must be high. Because of its geographic scope and daily behavior-modifying intent, the look and feel of the water conservation awareness program will be comparable in many ways to the polished 'Don't Mess with Texas' Campaign (DMWT). To preserve an elevated, core conservation message, to avoid the need to develop or coordinate multiple messages, and to minimize implementation costs of the statewide program, campaign promotional materials will be generic enough to be used across all regions of the state.

Like the DMWT campaign, the water conservation campaign will broadly appeal to all Texans. However, the public-awareness program for water conservation will be tailored to suit (1) the unique character of water conservation, (2) the fact that hydrology and conservation practices in Texas vary from region to region, and (3) the responsiveness of Texans to related ad messages. The program will rely on its initial research to guide overall campaign messaging. Consequently, the particular balance between awareness-enhancing and behavior-altering messaging incorporated into the water conservation awareness program will most likely differ from the DMWT campaign. Research will reveal, for example, the degree to which the conservation campaign should focus on illustrating specific (generic) behaviors (e.g., dropping a piece of litter on the road, wasting water using low-efficiency showerheads) or the fundamental consequences of our individual behavior (e.g., ugly roads from littering, dry rivers from wasting water) or Texans' link to their natural resources and the related costs of overlooking this link (e.g., Texans littering the landscape at a clean-up cost of \$32 million, Texans' inefficient use of water resulting in lower lake levels at some associated cost).

Like the DMWT campaign, to get its message across, the water conservation awareness program will capitalize on Texas culture and Texans' appreciation of their natural resource heritage.

Program Components

Experienced contractors will perform most tasks associated with the water conservation awareness program. As part of the overall process of developing, launching, and maintaining the campaign, these contractors will gather additional input by surveying and consulting with local conservation programs throughout Texas. The statewide awareness program can be broken down into three major components:

Research

Prior to approving a campaign for placement in the media, an independent subcontractor, approved by TWDB, will be engaged under subcontract by the primary advertising firm. This subcontractor will perform research to determine the greatest barriers to conservation by individuals and the best ways of appealing to the public to take conservation more seriously. This work will include performing data collection on public behaviors, attitudes, and perceptions; evaluation of the data; and reporting on results (i.e., marketing research). Data collected will include key demographic and psychographic characteristics of the target 'market.' All research data produced will be made available to local conservation programs and to the public in general.

A primary initial task to be performed by the primary contractor will be to produce and recommend to TWDB an original, catchy, enduring slogan for the program based on experience and subcontractor research. On the basis of the initial data collected, subsequent marketing research (e.g., focus groups) will be performed to test and shape the wording and flavor of the long-term core campaign message (including the slogan) to be used in both launching and maintaining the statewide program. In the end, TWDB will vet and approve the final conservation program slogan and message that will be used to launch the program.

Advertising/Public Relations

The water conservation program will use a marketing approach within Public Service Announcements (PSA's), eventually employing

- Strong 'branding,'
- Use of advertising,
- Corporate and nongovernmental organization (NGO) partners, and
- Grassroots outreach.

The work will require:

- (1) Creation and development of educational, behavior-molding concepts to be conveyed in advertising messages and PSA's, including graphics, copy writing, and production;
- (2) Placement of these messages in the appropriate media;
- (3) Solicitation of free media time, spaces, bonus spots, and/or station promotions;
- (4) Solicitation of corporate involvement and support in campaigns;
- (5) Development and production of additional materials for use in public-awareness and education programs; and
- (6) Coordination of activities (e.g., special events, media relations) focused on water conservation.

To achieve and sustain success, the public-awareness program will require recurring and substantial follow-up market research to gage the quality of the ongoing campaign and actual impact of the campaign. This information will be used to further shape future messages and media coverage.

Coordination with Existing Conservation Programs/State Agencies

Although the core statewide messages and advertisements will be developed with input from local conservation programs, some program components, special local events, or local media/businesses participating within the statewide programs may require coordination with local conservation programs. Program coordination may be in the form of cooperation with special statewide or local annual events, by providing marketing materials and guidance to local organizations engaged in water conservation, or peripheral support of other volunteer activities. These activities will occur as necessary.

Implementation

It is estimated that once the 79th Texas Legislature provides funding, approximately six months of background research will be required prior to launching the program. Contractor procurement

and research will be largely completed by mid- to late 2006. This activity will be followed by several months of media and material preparations, followed by a several-week buildup in early 2007 to announcement of the program's launch (i.e., media blitz). Launching a successful statewide public-awareness program will require a significant amount of effort and funding in the initial, pre-launch phases.

The overall public-awareness program will be coordinated and managed by TWDB with input from regional and local conservation programs and the public and will be coordinated with the Regional and Statewide Public Recognition Program also being recommended by the Task Force. Public-relations and advertising-type firms will perform most program activities under multiple-year contracts. The standing Water Conservation Advisory Council (Council) proposed by the Task Force will be responsible for making recommendations to TWDB and its contractors, at least annually, regarding the statewide awareness program and associated local involvement in implementation of the program.

Once the statewide water conservation program is launched, work required to sustain the program should decrease somewhat, depending on the level of its initial success.

Program Budget

To be successful, the program will require launching funds, as well as long-term funding, to sustain the program and associated supporting research and evaluation. The estimated budget for successful initiation of a new, statewide, comprehensive public-awareness campaign for water conservation declines from approximately \$10 million in the first-year launch period, to approximately \$6.7 million the second year, and to approximately \$5.7 million/year in subsequent years. Appropriate funding levels in later years (after five years) will depend on the level of initial success and resulting direction of the program. The preliminary portion of costs for conducting quantitative surveys measuring Texans' level of water conservation awareness, testing creative concepts through focus groups, and developing a 'brand' and campaign slogan is estimated to be approximately \$150,000.

Most of the expenses in all years will be related to media planning and purchasing appropriate media coverage. Because the campaign is a public service, it will be the intention of the program and the responsibility of the contractor to ensure a *minimum* media-purchase leverage of one free, matching media spot for every purchased media spot. By doing so, the program will ensure at least a doubling of the amount of media obtained for every dollar spent as compared with private media purchases.

Program funding can be leveraged through the use of a matching-funds program and corporate partnerships. Matching funds could be used, for example, to increase media purchase by local municipalities interested in airing additional state-produced water conservation PSA's in their region. Corporate and media partnerships could augment program funds by supporting special events, expanding media coverage, and subsidizing publications and PSA production.

TASK FOUR: STATE FUNDING OF INCENTIVE PROGRAMS

Evaluating the proper role, if any, of state funding of incentive programs that may facilitate implementation of best-management practices and water conservation strategies.

Introduction

The Task Force formally and unanimously supported the proposition that there is a role for state funding of incentive programs that may facilitate implementation of best-management practices and water conservation strategies including water reuse. Incentive programs should be used as conservation stimuli and as a means to boost the amount and sophistication of water conservation and, as such, should be targeted and short-term when possible. In general, the Task Force believes that incentives should focus on activities that reinforce changes in behavior and practices that are the least expensive and that lead to greatest water savings, either directly or indirectly.

In addition, the Task Force supports continuation and potential enhancement of existing state and federal water conservation incentive programs. Many of these state and federal programs and their activities relating to municipal and agricultural water conservation are described in detail in a report submitted by the TWDB and the Texas State Soil and Water Conservation Board (TSSWCB) to the 78th Texas Legislature titled *An Assessment of Water Conservation in Texas*.

In that report, TWDB and TSSWCB discuss current and future conservation needs, recommendations for programmatic approaches, funding, and legislative changes that will further enhance opportunities for effective implementation of water conservation strategies and programs in Texas. A number of recommendations and ideas put forward in *An Assessment of Water Conservation in Texas* were incorporated into important water conservation legislation enacted by the 78th Texas Legislature. In an effort to continue this momentum and to add value to current state investment in water conservation incentive programs, the Task Force respectfully submits the following further recommendations:

Recommendation #3—Regional Conservation Coordinators (RCCs)

The Task Force recommends that the Legislature consider providing Regional Conservation Coordinators (RCCs) to the Planning Regions. Up to 16 RCCs, one per Planning Region, would be directly employed by TWDB. These technical staff members would report to Regional Water Planning Groups and assist communities, utilities, irrigation districts, and other water users within Regions to support conservation activities, including water reuse. RCCs would be located within their associated Regions and be trained and directly supported by TWDB. Each RCC would be a specialist in one or more of the following areas: municipal, industrial, or agricultural water conservation. The RCCs could be shared by Regions and would provide a variety of services based on needs identified by Planning Groups and their associated water-use sectors. For example, Agricultural RCCs in some regions might focus on identifying needs and coordinating existing conservation activities, and Industrial RCCs might focus on providing technical assistance, whereas Municipal RCCs might focus on assisting with development and

implementation of conservation plans. All RCCs would be available to assist communities and other water users in identifying and applying for sources of financial assistance, such as State Revolving Fund grants and loans, USDA-EQIP funding, and other similar sources.

RCCs would assist a wide variety of smaller communities and other water users and suppliers in inventorying existing conservation resources, identifying conservation needs, and developing and implementing conservation programs and BMPs. Seeding local conservation programs with knowledge and workable conservation programs will broadly promote long-term, voluntary conservation, including water reuse, at a low cost. Recipient communities would face no direct cost of the conservation assistance and could focus on conservation planning and implementation. Municipal RCCs would be directed to focus on assisting small- to medium-sized communities (<25,000 population).

COST: \$1,280,000 per year [one RCC assigned to each Region—16 RCCs. salary+fringe+travel @ \$80,000 each × 16]

Recommendation #4—Public Recognition

The Task Force recommends that regional and statewide public recognition (i.e., awards) be given to those who have demonstrated significant water conservation savings, including those through water reuse. Awards should be given at the regional level for at least all three water-use sectors (agricultural, industrial, municipal). Top regional award recipients would then be included in a state-level award evaluation for statewide recognition. Planning Groups would coordinate and evaluate regional awards, and the proposed Water Conservation Advisory Council would give statewide conservation awards. The award process would be coordinated through Planning Groups and their state-sponsored RCCs.

Recommendation #5—Innovative Water Conservation Grants

With existing mechanisms at TWDB being used, the Task Force recommends that the Texas Legislature consider funding a limited program of grants that can be awarded to water purveyors and other entities to implement innovative water conservation programs, including water-reuse programs. The programs should expand the body of knowledge available to Texas water users and/or have the potential for greater application across the state. The grants can be awarded competitively in categories designated by a special advisory committee appointed by TWDB for that purpose. The grants program, even if funding is limited, will help bring attention to the importance of water conservation, including water reuse, and encourage the development of new ideas in the field.

Recommendation #6—On-Farm BMP Implementation Cost-Share

For on-farm best-management practices, the Task Force recommends that the Legislature consider funding a cost-share program to implement water conservation plans (WCPs) on

irrigated agricultural lands through the Texas State Soil and Water Conservation Board (TSSWCB). These plans would be similar to water-quality management plans but would require only those BMPs that have a water conservation component.

A WCP is a management plan that comprises a collection of BMPs that are appropriate to the agricultural operation. The plan would be developed by the farmer or rancher in cooperation with a planner or technician employed by the TSSWCB, soil and water conservation district (SWCD), or Natural Resource Conservation Service (NRCS). If the WCP were to meet all technical criteria, it would be certified by TSSWCB. For practices that have a cost to implement, farmers and ranchers may be eligible for cost-share assistance if the farmer or rancher agreed to implement and maintain the plan for the expected life of the practices. After an eligible practice is implemented and implementation is certified by the SWCD, the producer may be eligible to receive cost-share assistance for that practice. To be eligible for cost-share assistance, a plan would need to show verifiable potential water savings.

These plans would be developed and implemented through existing TSSWCB regional offices and SWCDs that currently work with farmers to implement water-quality management plans and administer water-quality cost-share programs. Regional offices working in areas with significant irrigation agriculture are located in Hale Center, Harlingen, Wharton, and Dublin.

The Task Force has no specific dollar-amount recommendation but will rely on guidance from the Legislature. Conservation Plan cost is based on an average cost estimate of \$10,000/plan. The maximum cost-share rate would be 75 percent, with a cost-share cap of \$25,000 per plan.

Recommendation #7—Brush Control

The Task Force recommends that the Legislature continue to fund the State Brush Control Program and to expand it as funds become available.

TASK FIVE: PER-CAPITA WATER USE, TARGETS AND GOALS

Advising the Texas Water Development Board and the Texas Commission on Environmental Quality on:

- (A) a standardized methodology for reporting and using per-capita water use data,*
- (B) establishing per capita water use targets and goals, accounting for such local effects as climate and demographics;*
- (C) other possible uses as appropriate.*

Introduction

SB 1094 directed the Task Force to advise TWDB and TCEQ on a standardized methodology for reporting and using per-capita water-use data and establishing per-capita water-use targets and goals while accounting for such local effects as climate and demographics.

This advice is meant, in part, to complement TWDB and TCEQ efforts to implement HB 2660 (78th Legislature), which directs the two agencies to identify quantified target goals for water conservation that water suppliers and other entities may use as guidelines in preparing water conservation plans required by the state. The quantified target goals for water conservation include goals for water-loss programs and goals for municipal use in gallons per capita per day.

Per-capita water use is the average amount of water used by each person in a population served by a water utility. Per-capita water use, generally described in terms of gallons per capita per day (gpcd), is directly related to a water utility's population and service profile. Variable factors that define a water utility's population and service profile include whether the supplier also provides wholesale treated water service; relative concentration of industrial, commercial and institutional users; rate of growth and type of development; climatic conditions such as rainfall and temperature; consumers' ability to pay for water as indicated by average incomes; percentage of seasonal residents; source-water characteristics including water quality; and availability of water. All of these factors can influence per-capita water use.

Texas has a wide range of per-capita water use because its water utilities exhibit a wide range of service and population profiles. The Task Force recognizes that a simple comparison of per-capita water use among Texas municipal water-supply providers that may have significant differences in climate and geography, as well as in their service and population profiles may, without additional data and analysis, lead to inaccurate conclusions about comparative water use efficiencies among those providers (see Table 3).

Table 3: Water System Sizes and Average GPCDs
Texas Water Development Board : 2001 Water Use Survey Data

System Size Category (Population*)	Systems in TWDB 2001 Survey Data*	Average Reported GPCD* (weighted by population)	Percent of Systems Reporting Below 140 GPCD*	Survey Reported Water Use in Acre-Feet*	Annual Reduction In Year 10 - 1% Annual Reduction**
1-499	926	130	72%	28,268	1,355
500-3,299	1,210	137	65%	280,358	14,717
3,300-9,999	478	140	60%	408,856	22,464
10,000-49,999	189	156	51%	695,556	43,461
50,000-99,999	27	205	30%	442,704	35,536
100,000+	25	170	28%	2,141,665	163,259
ALL ENTITIES	2,855*	164	65%	3,997,407	280,792

* Does not include: systems that reported zero population; systems with >1,000 GPCD; systems with < 50 GPCD

All calculations include system's total (Mun + ICI) water use.

Based on *reported* population size - not census tract data.

** Only includes systems with > 140 GPCD;

reduction based on Year 2001 water use with no adjustment for population growth;

adjusted by annual one percent reduction (9.55% of base year in Year 10).

Therefore, the challenge for the Task Force was to develop a standardized methodology for reporting and using per-capita water-use data that would

- provide meaningful assistance to TWDB and TCEQ in their implementation of HB 2660,
- provide assistance to municipal and other water utilities in illustrating potential for progress in water conservation, given their current and future population and service profiles, and
- minimize the potential for inappropriate comparisons among regions and municipal water-supply providers.

The Task Force adopted the following recommendations on a standardized methodology for reporting and using per-capita water-use data that includes direct and indirect recycling and reuse of water, including the use of graywater, as a component of conservation and establishes per-capita water-use targets and goals while accounting for local effects such as climate and demographics.

Recommendation #8—GPCD Standard Methodology

The Task Force developed and recommends a standardized methodology for determining total gallons per capita per day (gpcd) water use and residential gpcd water use. Total gpcd is herein defined as the total amount of water diverted and/or pumped for potable use divided by total population. Indirect-reuse-diversion volumes shall be credited against total diversion volumes for the purpose of calculating gpcd for targets and goals.

Residential gpcd is herein defined as single-family plus multifamily consumption divided by the total population. Application of this methodology is intended to establish gpcd water-use benchmarks for tracking purposes and to evaluate effectiveness of conservation measures subsequent to their implementation. Modifications are being developed for the TWDB annual Water-Use Survey that will result in collection of data needed to consistently calculate total and residential gpcd.

Recommendation #9—GPCD Targets and Goals

The Task Force adopted specific gpcd targets and goals related to average annual reductions in total gpcd and residential indoor use that it recommends should be considered by the entities developing water conservation plans required by the state. These targets are as follows:

- (1) All retail public water suppliers that are required to prepare and submit water conservation plans should establish targets for water conservation, including specific goals for per-capita water use and for water loss programs using appropriate water conservation best-management practices (BMPs) or other water conservation techniques to achieve their targets and goals in an effort to increase efficiency in water use and achieve conservation as defined in Chapter 11 of the Texas Water Code.

(2) Municipal Water Conservation Plans required by the state shall include per capita water-use goals.

a) An entity required to file such a plan should develop its per capita water use goals using the following methodology:

- (i) Obtain the last five years, annual gpcd total per capita water use, if available;
- (ii) Project water supply requirements for the next ten years using information such as population trends, historical water use, and economic growth;
- (iii) Consider the efficiencies and savings that the entity anticipates it can achieve by utilizing the appropriate best management practices or water conservation techniques that it chooses to implement to meet its targets and goals; and
- (iv) Using the information above, establish per capita water use goals for the next five- and ten-year periods, taking into consideration, among other things, state and regional targets and goals, local climate, demographics, and service profile.

b) A Municipal Water Conservation Plan also must

- (i) Include methods to track annual water use and to develop information sufficient to evaluate the conservation strategies that have been implemented;
- (ii) Include a plan to measure progress annually and, at a minimum, evaluate the progress toward meeting the target and goals every five years;
- (iii) At a minimum, re-establish updated targets and goals every five years; and
- (iv) Following notice and hearing, be adopted at an open meeting.

c) Targets and goals established by an entity should also consider

- (i) A minimum annual reduction of one percent in total gpcd, based upon a five-year rolling average, until such time as the entity achieves a total gpcd of 140 or less.
- (ii) A statewide goal to reduce total statewide water demand to an average of 140 gpcd; and

- (iii) Any guidelines that may be adopted by the SB-1 Regional Water Planning Group in which the entity developing the Municipal Water Conservation Plan is located.
- (3) The State, through the Texas Water Development Board, will
- (i) Seek to achieve its goal of a reduction of total statewide water demand to an average of 140 gpcd through average annual reductions of one percent per year; and
 - (ii) Work with manufacturers of water-using equipment, water utilities, water users, and others to reduce overall statewide indoor water use⁴ to 50 gpcd⁵ through education, research, and funding programs.

Recommendation #10—Conservation First

In considering water conservation targets and goals, the Task Force also adopted a recommendation that the goal of a Municipal Water User Group* with unmet water needs in the applicable Regional Water Plan should be to first meet or reduce that need using advanced water conservation techniques, including any appropriate BMPs or other water conservation strategies selected by the Water User Group. As used here, the term “advanced water conservation techniques” means conservation techniques that go beyond implementation of the state plumbing fixture requirements and beyond adoption and implementation of water conservation education programs.

*defined in the 2006 regional water-planning process as a city with a population of 500 or more or an individual utility providing more than 280 AFY of water for municipal use.

⁴ The preferred method for determining indoor gpcd is to meter indoor usage, but because utilities do not often meter indoor use separately, reasonable estimation methods should be considered. These include metering a representative sample of the utility’s residential customers, using billing data for the wettest winter month(s) when irrigation would be minimal, or basing an estimate upon the lowest pumping days of the year, which could reasonably be assumed to have minimal outdoor irrigation, and adjusting for estimated nonresidential use.

⁵ 50 gpcd is based on *Residential End Uses of Water*, AWWA Research Foundation, 1999, and Figure 2.4, “Average indoor water use in conserving North American single-family home,” *Handbook of Water Use and Conservation*, Vickers, A., 2001. TWDB and the recommended Water-Conservation Advisory Council should continue to provide ongoing evaluation of target and goal guidelines as appropriate on the basis of additional data (see Recommendation #12).

TASK SIX: EVALUATION OF STATE OVERSIGHT AND SUPPORT OF CONSERVATION

Evaluating appropriate state oversight and support of any conservation initiatives adopted by the Legislature.

Introduction

TCEQ requires entities applying for a new or amended water right to submit a water conservation plan that adopts reasonable conservation measures and that is consistent with the applicable regional water plan. In addition, certain holders of current water-rights permits have had to implement TCEQ-approved water conservation plans. These water-rights permit holders include municipal and industrial users with a surface-water right of 1,000 AFY or more and irrigation users with 10,000 AFY or more.

In the summer of 2002, TCEQ surveyed more than 500 entities that (1) hold a municipal-use surface-water-right permit issued by TCEQ for more than 1,000 AFY or (2) had obtained financial assistance from TWDB in excess of \$500,000. All of these water suppliers should have an active conservation program in place. The survey was conducted to determine to what degree conservation programs had been implemented. Of the 502 attempted surveys, 378 surveys were successfully completed. Whereas 93 percent of the 378 water suppliers that completed their survey asserted that their plans were effective, 27 percent noted that they take no action to monitor the effectiveness of their conservation programs. If a program is not routinely monitored or evaluated, the entity's justification for effectiveness cannot be accurately verified. Of the 378 water suppliers surveyed, 88 percent could not identify their quantifiable water conservation goals and/or the time frame for achieving those goals.

In 2003, the 78th Texas Legislature passed HB 2660, which established new requirements for water conservation plans. The bill required TCEQ and TWDB to jointly develop model water conservation programs for different types of water suppliers that include recommended BMPs by September 1, 2004. Target goals for water conservation identified by TCEQ and TWDB for consideration by water suppliers and other entities in preparing water conservation plans are not enforceable requirements.

Beginning May 1, 2005, all water conservation plans required to be submitted to TCEQ or to TWDB with an application for financial assistance must include specific, quantified, 5- and 10-year targets for water savings. The entity preparing the plan establishes the targets. Targets must include goals for water loss programs and goals for municipal use in gpcd.

In addition to HB 2660, the 78th Texas Legislature passed HB 2663, which required TCEQ to establish quantifiable goals for drought contingency plans. TCEQ and TWDB by joint rule were directed to identify quantified target goals for drought contingency plans that wholesale and retail public water suppliers, irrigation districts, and other entities may use as guidelines in preparing drought contingency plans. Target goals for water conservation identified by TCEQ and TWDB for consideration by wholesale and retail public water suppliers, irrigation districts, and other entities in preparing drought contingency plans are not enforceable requirements.

By May 1, 2005, drought contingency plans required by TCEQ must include specific, quantified targets for water-use reductions to be achieved during periods of water shortages and drought. The bill requires TCEQ and TWDB to jointly develop model drought contingency programs for different types of water suppliers that suggest BMPs.

Recommendation #11—Water Conservation as a Criterion for Funding and Compliance

The Task Force recommends that the Legislature make necessary statutory changes to

- (1) Require all retail public water suppliers serving a population of 3,300 or more to develop a water conservation plan based on specific targets and goals and utilizing appropriate BMPs or other conservation techniques. The affected retail public water suppliers should be required to (a) submit the water conservation plans to TWDB for review and approval and (b) annually report the progress of their program to TWDB,
- (2) Ensure that water users that are subject to TCEQ requirements for water conservation plans and/or TWDB financial assistance requirements for water conservation plans report annually to TWDB on the progress of their program,
- (3) Authorize TWDB to refer systems in noncompliance with the reporting requirements described in 1 and 2 to TCEQ and authorize TCEQ to institute administrative remedies for failure to meet these plan submittal and reporting requirements, and
- (4) Direct TWDB, when considering applications for loans/grants from the Water Development Fund for implementation of water-supply projects in the State Water Plan, to give priority to applications by entities that have (a) already demonstrated significant water conservation savings or (b) through implementation of the proposed project, will achieve significant conservation savings.

The Task Force recommends that the Texas Legislature ensure that TCEQ and TWDB receive appropriate funding to carry out these duties. The estimated fiscal implication to the state is \$305,000 per year.

Recommendation #12—Water Conservation Advisory Council

The Task Force recommends that a standing Water Conservation Advisory Council (Council) be established to advise the Texas Legislature, TWDB and TCEQ, other state agencies, water suppliers and other political subdivisions, and the public on matters regarding water conservation, including water reuse. Activities that the Council should routinely pursue include the monitoring of (1) trends in water conservation implementation, (2) new technologies for possible inclusion as BMPs in future BMP Guides, (3) effectiveness of the public-awareness program and associated local involvement in implementation of the program, (4) development of a State Water Management Resource Library, (5) effectiveness of public recognition programs, (6) implementation of water conservation strategies by all water-user groups included in regional water plans, and (7) target and goal guidelines to be considered by TCEQ and TWDB.

Recommendation #13—Cataloging and Tracking Water Conservation Plans

The Task Force recommends that an interactive, Internet-based database system be developed to facilitate storage and review of information related to water conservation plans and their implementation. The database system will store information on all retail public water suppliers' water conservation plans in a format consistent with the BMP structure in the BMP Guide. Any additional information required by TWDB to comply with administrative reporting requirements should be included as well. The system would be used by, and available to, all entities subject to water conservation plan requirements and state agencies responsible for overseeing compliance with these requirements.

Water Conservation Plan Components

Both electronic storage (for efficient retrieval and review) and tracking of retail public water supplier Water Conservation Plans and progress toward implementation would be accomplished through the development of an interactive, Internet-based, database tracking system. This system would be available to all entities for which Water Conservation Plans are required.

To meet administrative completeness requirements, the Water Conservation Plans should include at least the following elements:

- (1) A utility profile including population data, customer data, and water use data;
- (2) Quantified 5- and 10-year targets for water savings, based on goals for water loss programs and goals for municipal water use in gpcd;
- (3) A program of continuing public education and information regarding water conservation;
- (4) A water rate structure, which balances economic development with water availability and does not encourage the excessive use of water;
- (5) A statement of how their Water Conservation Plan would be implemented on the basis of goals utilizing appropriate BMPs or other water conservation techniques; and
- (6) A statement of how implementation tracking of the Water Conservation Plan will be accomplished.

IV – ADDITIONAL RECOMMENDATIONS

The Task Force developed additional recommendations that are not explicitly related to its duties as stated in SB 1094 but which it deemed relevant to the overall issue of water conservation implementation in Texas.

Recommendation #14—Establish Toilet Performance Standards

The Task Force recommends passage of legislation establishing performance standards for toilets to ensure that toilets sold in the state cannot be retrofitted so that they waste water.

Recommendation #15—Establish Water Management Resource Library

The Task Force recommends establishment of a Water Management Resource Library for Texas. This library would be mainly an electronic resource managed by TCEQ or TWDB and would catalog and provide a link to public policy summaries and specific legislation and regulation, BMPs, case studies, water-use technologies, and other planning resources. The library would include an interactive, Internet-based database system developed to facilitate storage and review of information related to water conservation plans and their implementation. The database system will store information on all water conservation plans in a format consistent with the BMP structure in the BMP Guide. Any additional information required by TWDB to comply with administrative reporting requirements should be included as well. The system would be used by, and available to, all entities subject to water conservation plan requirements and state agencies responsible for overseeing compliance with these requirements.

Recommendation #16—Continue Funding State Conservation Programs

The Task Force supports the continued funding of Agricultural Water Conservation Grants and State Energy Conservation Office Grants administered by Texas Water Development Board, and the North American Development Bank's Water Conservation Infrastructure Fund, as well as state loans and grants to assist political subdivisions in meeting the cost-share portion of federal projects for agricultural water conservation, including federal and state programs for implementing agricultural best-management practices, such as the Federal Lower Rio Grande Water Conservation and Improvement Act, as amended, and the U. S. Department of Agriculture's Environmental Quality Incentive Program.

Recommendation #17—Continue Funding Conservation Research and Education Programs

The Task Force recognizes the role of the Texas Agricultural Experiment Station, Texas Cooperative Extension (TCE), and state universities in developing and evaluating water conservation technologies, management practices, and policies, as well as providing educational programs designed to encourage conservation. The Task Force commends these agencies and

their university and federal agency partners (Texas Tech University, West Texas A&M University, Kansas State University, New Mexico State University, and USDA Agricultural Research Service) for securing federal education programs for the Ogallala aquifer and Rio Grande Basin regions. The Task Force recognizes the major contributions of these research and education programs to irrigators, both urban and agricultural, in developing and facilitating implementation of needed water management practices to both conserve and efficiently use our limited water supplies. The Task Force also recognizes the assistance these agencies and universities provide to water conservation programs of TWDB, TCEQ, TSSWCB, Texas Department of Agriculture, Planning Groups, groundwater districts, irrigation districts, municipalities, and other water managers. The Task Force commends the strong collaboration among agencies, universities, and underground water conservation districts in the Texas High Plains, as well as cooperative programs in South Texas and the Edwards aquifer region led by the Irrigation Technology Center. The Task Force encourages all agencies and universities to continue to strengthen their valuable water conservation research and education programs.

Recommendation #18—Endorse Land Stewardship as a Conservation Strategy

Effective land stewardship involves managing land to maximize the quality and quantity of every drop of rain. Responsible land stewardship enhances the efficiency and effectiveness of our state's watersheds, which act as a sponge, capturing rainwater and filtering it as it enters our aquifers, streams, lakes, bay, and estuaries. Proper land management techniques help increase surface and groundwater supplies.

Ninety-five percent of the state's land surface is privately owned, making up an overwhelming majority of all watersheds. In addition, these lands overlie many of the state's most important aquifers and are a major conduit of recharge to these groundwater resources. The water-supply and quality benefits of responsible land stewardship can be significant. The strategy can be cost-effective, sustainable, efficient, and beneficial to the environment. The Task Force highly recommends that the Texas Legislature recognize effective land stewardship as an important and significant water management strategy.

Recommendation #19—Study Impacts, if Any, of “Take or Pay” Contracts on Conservation

The Task Force recommends that an interim study be established to examine the impacts, if any, of “take or pay” contracts on efforts to achieve water conservation and to make appropriate recommendations based on the findings of that examination.

Recommendation #20—Expand Funding of Texas A&M's PET Network

The Task Force recommends that funding of Texas A&M University System's potential evapotranspiration (PET) network be expanded in order that more weather stations are on-line

and a larger number of water users can use evapotranspiration (ET) to determine adequate levels of water to meet outdoor water demands.

Recommendation #21—Coordinate Rules Regarding Conservation and Distribution System Capacity Requirements

Concerns were raised that existing rules regarding minimum pumping and storage capacity in distribution systems pursuant to 30 TAC Chapter 290 may complicate efforts to achieve gpcd goals. Specifically, it might be difficult for entities to secure funding to provide pumping capacity at 0.6 gallons per minute per connection when they have adopted conservation goals that use less than that amount. The Task Force acknowledges that there may be some inconsistency in this regard and suggests that water conservation goals be coordinated with the variance process for establishing alternative minimum pumping capacity pursuant to 30 TAC Chapter 290.45.

Recommendation #22—Provide Protection from Cancellation of Water Rights Due to Conservation

The Task Force recommends protecting from cancellation due to nonuse that portion of a water right associated with water saved because of the implementation of a water conservation project or a BMP. The water-rights holder should document the water savings in his or her Water Conservation Plan in order to protect the water conserved. A suggested modification to the Water Code is included in Section VI.

Recommendation #23—Conduct “End-Use” Studies of Residential Water Demand

The Task Force recognizes the value of developing more accurate data about the current residential water demand in various regions of the state as an aid to better understanding of actual use and to more informed planning by water utilities. Therefore, the Task Force recommends that several “end-use” studies be conducted around the state to develop these data.

Recommendation #24—Provide Assistance in Bridging Conservation Funding Gaps

The Task Force recommends that the Legislature consider

- 1) Providing funding for conservation plan development to the smaller entities (< 20,000 population) that may be required to prepare water conservation plans as a result of Task Force recommendations,
- 2) Assisting water suppliers who depend on revenue to finance capital improvement programs, in addressing financial impacts that may result from water conservation programs, and
- 3) Pursuing federal and state funding to assist WUGs implement certain conservation strategies such as rebate programs.

Recommendation #25—Provide Additional Funding for Water Use Data

Proper planning and implementation of water conservation measures require detailed information on water use patterns. The Task Force recommends that the Legislature consider providing additional funding and staff to TWDB for additional collection, review, analysis, and dissemination of data on water use in Texas. TWDB is the appropriate state agency to collect and review data on water use and water conservation in the state because it already has considerable expertise in this area.

The Task Force suggests that TWDB expand its data collection efforts, which may include more detailed data on single-family use; multi-family use; and commercial, industrial, institutional, and other categories of water-use information, in addition to information on income and other key demographic factors.

Performing this additional level of data analysis is crucial to developing an accurate picture of current water usage patterns and the resulting potential for water conservation.

This work will

- 1) Allow for better apples-to-apples comparisons of water use between water use sectors and entities.
- 2) Facilitate quantification of trends across the state.
- 3) Provide TWDB and regional planning groups with more information from which to project future water demands.

V – OVERVIEW

In 2003, the 78th Texas Legislature determined that state policy on water conservation in Texas was fragmented and unfocused.⁶ Concerned that this lack of cohesion and clarity of purpose in state policy would compromise water conservation's critical role in meeting the state's future water supply needs, the Legislature established the Water Conservation Implementation Task Force via passage of Senate Bill (SB) 1094 to address the issue.

At the outset and throughout the course of its deliberations, the Task Force viewed inclusion of the term "Implementation" in its name by the Legislature as indicative of their desire to move water conservation to the next level in Texas—beyond the concept to actual, permanent, and substantial water savings.

The Task Force firmly believes that no other proposal contained in this report is more important to achieving a goal of integrating water conservation into our Texas way of life than its recommendation that the state create and fund a Statewide Public-Awareness Program for water conservation. Unless the people of Texas can be convinced that everyone needs to routinely practice water conservation, actual conservation success from the other recommendations will be limited. The public-awareness program would have the primary statewide goals of making individual Texans aware of the importance of water conservation to their future as residents of the state and to complement and reinforce other local and regional water conservation public-awareness programs and activities. The Task Force views the Statewide Public-Awareness Program as the foundational component for enhancing the ability of the actions and recommendations presented in this report to achieve their greatest overall water savings potential.

As a practical matter, the Task Force recognized that communities, individuals, and industry are more likely to voluntarily incorporate water conservation and water efficiency measures into their utility, agricultural, and industrial operations if information regarding the benefits, implementation, and applicability of water conservation is current, understandable, and readily accessible. Evidence of the need for improvement in this area surfaced in the evaluation of water conservation strategies contained in the regional water plans. Planning Groups listing water conservation as a means of meeting future identified water shortages expressed difficulty in obtaining information about the elements of successful conservation programs, good cost estimates, and reliable water savings estimates in water resource planning.

To help address this issue, the Task Forces developed a Best-Management Practices Guide (BMP Guide). The BMP Guide is a resource for municipal, industrial, and agricultural interests consisting of 55 science- and field-based practices that save a quantifiable amount of water, either directly or indirectly, and that can be implemented within a specified timeframe. In this report, the Task Force proposes several actions, such as the establishment of a State Water Management Resource Library, authorization of up to 16 Regional Conservation Coordinator

⁶ The official Bill Analysis on Senate Bill 1094 states, in part, "*State policy on water conservation in Texas is currently fragmented and lacks focus to ensure optimal utilization of water conservation to meet future water supply needs.*" Texas State Senator Robert Duncan noted in his remarks introducing Senate Bill 1094 to the Senate Natural Resources Committee that state policy on water conservation in Texas is currently fragmented and lacks focus.

(RCC) staff positions at TWDB, and creation of a standing Water Conservation Advisory Council (Advisory Council), which it believes will function to complement the BMP Guide and increase the overall knowledge, understanding, and implementation of water conservation measures.

The Resource Library, accessible over the Internet, will serve as a repository for the BMP Guide and other water conservation information, such as case studies, water-use technologies, planning resources, public policy, water conservation plans, water conservation progress reports, public recognition programs and local and statewide recipients of awards and recognition. The RCC staff at TWDB will work directly with the Planning Groups and water-supply entities in the Regional Water Planning Areas and provide, among other things, technical assistance related to implementation of practices contained in the BMP Guide. The Advisory Council, among its many proposed duties, will review new technologies for possible inclusion as BMPs in future updates to the BMP Guide. The interplay between the BMP Guide, Resource Library, RCC staff members, and Advisory Council is illustrative of the overall package of proposals contained in this report and demonstrates the Task Force's goal to fashion an integrated set of actions and recommendations that complement and add value to one another.

As another practical matter, the Task Force recognized that water conservation and water efficiency measures are more likely to be voluntarily implemented if they actually do what they are intended to do—save water cost-effectively. In this report, the Task Force proposes several actions, such as adoption of a standardized methodology for determining total gallons per capita per day (gpcd) water use, consideration of recommended gpcd targets and goals by retail public water suppliers when they develop water conservation plans required by the state, and development of an interactive, Internet-based database system to facilitate storage and review of information related to water conservation plans and their implementation, to help water utilities, water planners, and governmental agencies measure the success of water conservation programs subsequent to their implementation. In addition, these proposals are meant to provide policy makers with information to help determine the return on local, regional, and state investments made in response to recommendations contained in this report and to chart the course for future investments in water conservation.

The Task Force believes changes in statute will be required to implement a number of the proposals contained in this report, such as establishment of the Water Conservation Advisory Council, creation of the Statewide Public-Awareness Program, establishment of the Resource Library, and authorization for Regional Conservation Coordinators at TWDB. The Task Force has suggested, for the Legislature's consideration, specific language in bill format to accomplish these changes. Implementation of other proposals contained in this report, such as establishment of a standard methodology for determining gpcd and the cataloging and tracking of water conservation plans on an interactive, Internet-based database system, can be accomplished through state agency rule-making.

The aforementioned proposals are by no means exhaustive of the recommendations contained in this report. Other proposals, such as those recommending passage of legislation establishing performance standards for toilets, continued funding of the State Brush-Control Program at current or expanded levels, funding of a cost-share program for irrigated agriculture through the

Texas State Soil and Water Conservation Board, continued funding of conservation research and education programs, and endorsement of good land stewardship as an important and significant long-term water management strategy (to name a few), are all part of a comprehensive water conservation plan for Texas—intended to make the whole greater than the sum of its many parts.

VI – DRAFT LEGISLATION

1

2 By _____ .B. _____

3

4 A BILL TO BE ENTITLED

5

6 AN ACT

7 relating to water conservation.

8 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

9 SECTION 1. Chapter 16, Water Code, is amended by adding Subchapter K concerning
10 Water Conservation to read as follows:

11 SUBCHAPTER K. WATER CONSERVATION

12 Sec. 16.401. STATEWIDE WATER CONSERVATION PUBLIC AWARENESS

13 PROGRAM. The executive administrator shall develop and implement a statewide water
14 conservation public-awareness program in order to educate citizens of the state about the importance
15 of water conservation. The program shall take into account the differences in conservation needs for
16 various geographic regions of the state and shall be designed to complement and support existing
17 local and regional water conservation programs.

18 Sec. 16.402. WATER CONSERVATION PLAN. (a) In this section:

19 (1) “Retail public utility” has the meaning assigned by Section 13.002.

20 (2) “Best management practices” means those practices developed pursuant to
21 Section 11.1271(e).

22 (b) Each retail public utility that provides potable water service to a population of 3,300 or
23 more shall submit a water conservation plan to the executive administrator based on specific targets
24 and goals developed by the retail public utility and utilizing appropriate best management practices
25 or other water conservation strategies. For purposes of this section, the population served by a retail

1 public utility shall be based on the population estimates contained in the most recent regional water
2 plan adopted for the planning area in which the retail public utility is located.

3 (c) Each entity that is required to submit a water conservation plan to the executive
4 administrator, the board, or the commission under Chapters 11, 15, 16 or 17, shall report the progress
5 of its conservation program to the executive administrator annually.

6 (d) The executive administrator shall review each water conservation plan and annual report
7 to determine compliance with the minimum requirements and submission deadlines identified
8 pursuant to Subsection (f).

9 (e) The board may refer entities that have failed to comply with Subsections (b), (c), or (d) to
10 the commission. Notwithstanding the provisions of Subsection 7.051(b), the commission shall then
11 seek an administrative remedy under Chapter 7 against any entity referred to the commission by the
12 board for failure to comply with Subsections (b), (c), or (d).

13 (f) The board and commission shall jointly develop rules for the enforcement of the
14 provisions of this section and to identify the minimum requirements and submission deadlines for the
15 water conservation plan and annual reports required by Subsections (b) and (c).

16 SECTION 2. Section 11.1271, Water Code is amended by amending Subsection (e) and
17 adding Subsection (g) to read as follows:

18 (e) The commission and board jointly shall develop model water conservation programs for
19 different types of water suppliers that suggest best management practices for achieving the highest
20 practicable levels of water conservation and efficiency achievable for each specific type of water
21 supplier. Best management practices are voluntary efficiency measures that save a quantifiable
22 amount of water, either directly or indirectly, and that can be implemented within a specified
23 timeframe.

24 (g) Each applicant that has submitted a water conservation plan as required by Subsection (a)
25 shall report the progress of their conservation program to the executive administrator annually.

26 SECTION 3. Section 15.102(b)(2)(C), Water Code is amended to read as follows:

1 (b) The loan fund may also be used by the board to provide:

2 (1) grants or loans for projects that include supplying water and wastewater services
3 in economically distressed areas or nonborder colonias as provided by legislative appropriations, this
4 chapter, and board rules, including projects involving retail distribution of those services; and

5 (2) grants for:

6 (A) projects for which federal grant funds are placed in the loan fund;

7 (B) projects, on specific legislative appropriation for those projects; or

8 (C) water conservation, desalination, brush control, weather modification,
9 regionalization, and projects providing regional water quality enhancement services as defined by
10 board rule, including regional conveyance systems.

11 SECTION 4. Section 16.053(g), Water Code is amended to read as follows:

12 (g) The board shall provide technical and financial assistance to the regional water planning
13 groups in the development of their plans. The board shall simplify, as much as possible, planning
14 requirements in regions with abundant water resources. The board, if requested, may facilitate
15 resolution of conflicts within regions. The board shall develop and implement a regional
16 conservation assistance program consisting of coordinators located in regional water planning areas
17 of the state to enhance and facilitate water conservation efforts.

18 SECTION 5. Section 17.125, Water Code, is amended by adding Subsection (g) to read as
19 follows:

20 (g) The board shall give priority to applications for funds for implementation of water supply
21 projects in the state water plan by entities that have:

22 (1) already demonstrated significant water conservation savings; or

23 (2) will achieve significant conservation savings by implementing the proposed
24 project for which the financial assistance is sought.

25 SECTION 6. The Water Code is amended by adding a new Chapter 10 concerning the
26 Water Conservation Advisory Council as follows:

1 CHAPTER 10. WATER CONSERVATION ADVISORY COUNCIL

2 Sec. 10.001. DEFINITIONS. In this chapter:

3 (1) "Best Management Practices Guide" means the compilation of best management
4 practices developed pursuant to Section 11.1271(e).

5 (2) "Board" means the Texas Water Development Board.

6 (3) "Commission" means the Texas Commission on Environmental Quality.

7 (4) "Council" means the Water Conservation Advisory Council.

8 Sec. 10.002. CREATION AND MEMBERSHIP.

9 (a) The council is created to provide the governor, lieutenant governor, speaker of the house
10 of representatives, the legislature, the board, the commission, other political subdivisions, and the
11 public with the resource of a select council with expertise on water conservation and consists of 17
12 members selected by the Texas Water Development Board from applicants recommended by the
13 following entities and interest groups:

14 (1) Texas Commission on Environmental Quality;

15 (2) Department of Agriculture;

16 (3) Parks and Wildlife Department;

17 (4) State Soil and Water Conservation Board;

18 (5) Texas Water Development Board;

19 (6) regional water planning groups;

20 (7) federal agencies;

21 (8) municipalities;

22 (9) groundwater conservation districts;

23 (10) river authorities;

24 (11) environmental groups;

25 (12) irrigation district;

26 (13) industries;

1 (14) institutional water users;

2 (15) professional organizations focused on water conservation;

3 (16) higher education; and

4 (17) agricultural groups.

5 (b) The council members shall elect one member to act as the presiding officer of the
6 council. A new election shall be held upon the expiration of the presiding officer's term as a member
7 of the council.

8 (c) Initial members shall randomly draw for terms of either 2, 4, or 6 years. Subsequent
9 members shall serve staggered 2-year terms ending August 31 of odd-numbered years.

10 (d) A vacancy on the council shall be filled by appointment by the board.

11 Sec. 10.003. POWERS AND DUTIES OF THE COUNCIL. The council shall:

12 (1) monitor trends in water conservation implementation;

13 (2) monitor new technologies for possible inclusion as best management practices in the Best
14 Management Practices Guide;

15 (3) monitor the effectiveness of the statewide awareness program and associated local
16 involvement in implementation of the program;

17 (4) develop and implement a State Water Management Resource Library;

18 (5) develop and implement a public recognition program for water conservation;

19 (6) monitor the implementation of water conservation strategies by all water-user groups
20 included in regional water plans;

21 (7) monitor target and goal guidelines to be considered by the board and commission; and

22 (8) prepare a biennial progress report on water conservation in the state and submit it to the
23 governor, lieutenant governor, and the speaker of the house of representatives not later than
24 December 1 of each even-numbered year.

25 Sec. 10.004. COUNCIL STAFF. On request by the council, the board shall provide any
26 necessary staff to assist the council in the performance of its duties.

1 Sec. 10.005. PUBLIC MEETINGS. (a) The council may hold public meetings as needed to
2 fulfill its duties under this Act.

3 (b) The council is subject to Chapters 551 and 552, Government Code.

4 SECTION 7. EFFECTIVE DATE. (a) This Act takes effect immediately if it receives a vote
5 of two-thirds of all the members elected to each house, as provided by Section 39, Article III,
6 Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act
7 takes effect September 1, 2005.

8 (b) The changes in law made by this Act to Chapters 15 and 17, Water Code, apply only to
9 applications for financial assistance filed with the board on or after the effective date of this Act.

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.B.

A BILL TO BE ENTITLED

AN ACT

relating to the water rights and water conservation.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Section 11.173(b), Water Code, is amended by adding Subdivision (5) to read as follows:

(5) to the extent the nonuse resulted from the implementation of water conservation projects or practices as documented in the owner’s water conservation plan and annual conservation reports.

SECTION 2. EFFECTIVE DATE. This Act takes effect immediately if it receives a vote of two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes effect September 1, 2005.

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.B.

A BILL TO BE ENTITLED

AN ACT

relating to water conservation.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. STUDY EFFECTS OF CONTRACTS ON CONSERVATION. The executive administrator of the Texas Water Development Board shall prepare a study to examine the impacts, if any, of “take or pay” contracts on efforts to achieve water conservation and shall make a report to the legislature by January 1, 2007, with recommendations based on the findings of that study.

SECTION 2. EFFECTIVE DATE. This Act takes effect immediately if it receives a vote of two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes effect September 1, 2005.

1 By:

H.B. No. _____

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A BILL TO BE ENTITLED

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AN ACT

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8 relating to performance standards for toilets sold in the state.

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BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

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SECTION 1. The legislature finds and declares all the following: (a) Water conservation is

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an effective tool that will make the most effective use of the state's water resources.

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(b) The state's water plan has incorporated significant savings from the installation of 1.6

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gallon per flush toilets in new construction and the replacement of inefficient toilets with 1.6 toilets

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as the older toilets are replaced, as a component in the state's water supply.

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(c) If the projected savings do not occur, many parts of the state could suffer water shortages

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and a financial burden will be placed on the state.

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(d) Due to the design of many current gravity toilets, some of these toilets will use

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significantly more than 1.6 gallons per flush.

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(e) Toilet standards should ensure good performance.

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(f) Water conservation results in reduced energy use for pumping and treatment.

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(g) Reduced energy use improves air quality.

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SECTION 2. Section 372.002, Health and Safety Code, is amended by amending

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Subsections (b) and Subsection (c) to read as follows:

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Sec. 372.002. WATER SAVING PERFORMANCE STANDARDS. (a) A person may not

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sell, offer for sale, distribute, or import into this state a plumbing fixture for use in this state unless:

1 (1) the plumbing fixture meets the water saving performance standards provided by
2 Subsection (b); and

3 (2) the plumbing fixture is listed by the commission under Subsection (c).

4 (b) The water saving performance standards for a plumbing fixture are those established by
5 the American National Standards Institute or the following standards, whichever are more restrictive:

6 (1) for a sink or lavatory faucet or a faucet aerator, maximum flow may not exceed
7 2.2 gallons of water per minute at a pressure of 60 pounds per square inch when tested according to
8 testing procedures adopted by the commission;

9 (2) for a shower head, maximum flow may not exceed 2.75 gallons of water per
10 minute at a constant pressure over 80 pounds per square inch when tested according to testing
11 procedures adopted by the commission;

12 (3) for a urinal and the associated flush valve, if any, maximum flow may not
13 exceed an average of one gallon of water per flushing when tested according to the hydraulic
14 performance requirements adopted by the commission;

15 (4) for a toilet, maximum flow may not exceed an average of 1.6 gallons of water
16 per flushing when tested according to the hydraulic performance requirements adopted by the
17 commission. In addition, the commission shall adopt rules that set specifications and testing
18 procedures for toilets to ensure that:

19 (A) The maximum volume of water that shall be discharged by the toilet
20 when the original equipment flush valve seal, which is a flapper or other sealing device, is replaced
21 with a standard seal, and the field adjustment of tank trim is set at its maximum water-use setting
22 shall not exceed 2.0 gallons.

23 (B) Toilet tanks should either not contain more than 2.0 gallons of water or
24 the maximum volume of water that is discharged by the toilet when field adjustment of the original
25 equipment tank trim is set at its maximum water use setting shall not exceed 2.0 gallons.

1 (C) Toilet tanks equipped with a flush valve shall contain a flapper that is
2 leak free after being tested with toilet tank consumer products that contain bleach and other chemical
3 agents that degrade flappers.

4 (D) Any in-tank barrier, bucket, or dam is that is designed to restrict, retard,
5 or slow the flow of water through the open flush valve shall be tamper-proof or permanently affixed
6 to the tank, such that any attempt to remove the barrier or “dam” by cutting or breaking it shall
7 render the entire tank unusable.

8 (E) The flapper valve chain, if so equipped, shall be formed of plastic or
9 metal as a beaded or link chain only.

10 (F) The fill valve shall be a pilot valve type only.

11 (G) All toilets will be required at a minimum to remove 250 grams of media
12 using the Maximum Performance Testing Protocol (MAP) published by Veritec Consulting or
13 equivalent ASME standard if such a standard is adopted.

14 (H) Other specifications that would ensure the performance and water
15 efficiency of toilets.

16 (I) This section is effective January 1, 2007. The commission shall adopt
17 rules no later than January 1, 2006, and shall use the Los Angeles Department of Water and Power,
18 Requirement for Ultra-Low-Flush Toilets Supplementary Purchase Specification to ASME
19 A112.19.2.M and ASME A112.19.6; and the Maximum Performance Testing Protocol (MaP) as
20 posted on the California Urban Water Conservation Council web site or other location as guidance in
21 developing rules.

22 (J) Whenever either the Requirement for Ultra-Low-Flush Toilets
23 Supplementary Purchase Specification to ASME A112.19.2.M and ASME A112.19.6 or Maximum
24 Performance Testing Protocol (MaP) is revised, the Commission will initiate a rulemaking to match
25 the revised specifications or protocol and also make the revised rules effective on the same schedule
26 included in the revised specification or protocol.

1 (5) for a wall-mounted toilet that employs a flushometer or flush valve, maximum
2 flow may not exceed an average of two gallons of water per flushing or the flow rate established by
3 the American National Standards Institute for ultra-low flush
4 toilets, whichever is lower; and

5 (6) a drinking water fountain must be self-closing.

6 (c) The commission shall make and maintain a current list of plumbing fixtures that are
7 certified to the commission by an independent testing agency and the manufacturer or importer to
8 meet the water saving performance standards established by Subsection (b). To have a plumbing
9 fixture included on the list, a manufacturer or importer must supply to the commission, in the form
10 prescribed by the commission, the identification and the performance specifications of the plumbing
11 fixture. The commission may test a listed fixture to determine the accuracy of the independent
12 testing agency and the manufacturer's or importer's certification and shall remove from the list a
13 fixture the commission finds to be inaccurately certified.

14 (d) The commission may assess against a manufacturer or an importer a reasonable fee for
15 an inspection of a product to determine the accuracy of the manufacturer's or importer's certification
16 in an amount determined by the commission to cover the expenses incurred in the administration of
17 this chapter. A fee received by the commission under this subsection shall be deposited in the state
18 treasury to the credit of the water resource management account and may be used only for the
19 administration of this chapter.

20 (e) The commission shall, to the extent appropriate and practical, employ the standards
21 designated American National Standards by the American National Standards Institute in
22 determining or evaluating performance standards or testing procedures under this chapter.

23 (f) This section does not apply to:

24 (1) a plumbing fixture that has been ordered by or is in the inventory of a building
25 contractor or a wholesaler or retailer of plumbing fixtures on January 1, 1992;

1 (2) a fixture, such as a safety shower or aspirator faucet, that, because of the fixture's
2 specialized function, cannot meet the standards provided by this section;

3 (3) a fixture originally installed before January 1, 1992, that is removed and
4 reinstalled in the same building on or after that date; or

5 (4) a fixture imported only for use at the importer's domicile.

6 SECTION 3. EFFECTIVE DATE. This Act takes effect immediately if it receives a vote of
7 two-thirds of all the members elected to each house, as provided by Section 39, Article III, Texas
8 Constitution. If this Act does not receive the vote necessary for immediate effect, this Act takes
9 effect September 1, 2005.

VII – GLOSSARY

Acre-foot – The amount of water that would cover an acre of land to a level of one foot in depth (325,851 gallons). An acre-foot is often expressed in per annum terms as acre-feet per year (AFY).

Advanced Water Conservation – The term “advanced water conservation techniques” as used by the Task Force means conservation techniques that go beyond implementation of state plumbing fixture requirements and beyond adoption and implementation of water conservation education programs.

Best Management Practices (BMPs) – Voluntary efficiency measures that save a quantifiable amount of water, either directly or indirectly, and that can be implemented within a specified timeframe.

Conserved Water – That amount of water saved by a water right holder through practices, techniques, or technologies that would otherwise be irretrievably lost to all consumptive beneficial uses arising from the storage, transportation, distribution, or application of the water. Conserved water does not mean water made available simply through its nonuse without the use of such practices, techniques, or technologies.⁷

Goals – The qualitative and quantitative ends toward which an entity directs its efforts.

gpcd – gallons per capita per day.

Municipal Water Provider – A retail public utility that provides water service (see below).

Residential gpcd – is herein defined as single-family plus multifamily consumption divided by the total population.

Retail Public Water Supplier – An individual or entity that for compensation supplies water to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants when that water is not resold to or used by others.⁸

Retail Public Utility – Any person, corporation, public utility, water supply or sewer service corporation, municipality, political subdivision or agency operation, maintaining, or controlling in this state facilities for providing potable water service or sewer service, or both, for compensation.⁹

Reuse – As used in this report, the term reuse includes both direct reuse and indirect reuse. Direct reuse is the authorized use for one or more beneficial purposes of use of water that remains unconsumed after the water is used for the original purpose of use and before the water is either disposed of or discharged or otherwise allowed to flow into a water course, lake, or other body of state-owned water.¹⁰ Indirect reuse utilizes the bed and banks of a state watercourse for transport or storage of return flows as part of a reuse project. Return flows are defined as “*That portion of state water diverted from a water supply and*

⁷ TCEQ rules, 30 TAC 297.1(14)

⁸ TCEQ rules, 30 TAC 288.1(15)

⁹ TWDB rules, 31 TAC 357 (2)(6)

¹⁰ TCEQ rules, 30 TAC 288.11(16)

*beneficially used which is not consumed as a consequence of that use and returns to a watercourse. Return flow includes sewage effluent.”*¹¹

Targets – Specific, quantified, and time-based milestones used to achieve goals.

Total gpcd – herein defined as the total amount of water diverted and/or pumped for potable use divided by total population. Indirect-reuse-diversion volumes shall be credited against total diversion volumes for the purpose of calculating gpcd for targets and goals. Previous TWDB gpcd calculations did not include industrial use.

Water Conservation – The Task Force adopted the following working definition of *conservation*:
“Those practices, techniques, programs, and technologies that will protect water resources, reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.”

Task Force adoption of a working definition for *conservation* was not intended to serve as a recommendation that the Legislature consider changing the existing definition of *conservation* in the Texas Water Code but to serve as an aid to the reader in understanding what is meant by the term *conservation* in this report.

Water Conservation Plan – A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s).¹²

Water Management Strategy (WMS) – As used in regional and statewide water planning, it is a strategy for the management of water resources to provide for identified needs, including water conservation and drought response planning including water demand management, reuse of wastewater, expanded use or acquisition of existing supplies including systems optimization, aquifer storage and recovery, conjunctive use of resources, reallocation of reservoir storage to new uses, voluntary redistribution of water including water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements, subordination of existing water rights through voluntary agreements, enhancements of yields of existing sources, control of naturally occurring chlorides, interbasin transfers, new supply development including construction and improvement of surface water resources, brush control precipitation enhancement, desalination, and water supply that could be made available by cancellation of water rights based on data provided by the Texas Commission on Environmental Quality, and other measures.¹³

Wholesale Public Water Supplier – An individual or entity that for compensation supplies water to another for resale to the public for human consumption. The term does not include an individual or entity that supplies water to itself or its employees or tenants as an incident of that employee service or tenancy when that water is not resold to or used by others, or an individual or entity that conveys water to another

¹¹ TCEQ rules, 30 TAC 297.1(43)

¹² TCEQ rules, 30 TAC 288.1(17)

¹³ TWDB rules, 31 TAC 358.2(12)

individual or entity, but does not own the right to the water which is conveyed, whether or not for a delivery fee.¹⁴

Water User Group (WUG) – As used in regional and statewide water planning, WUGs are defined as one of the following¹⁵:

- cities with population of 500 or more,
- individual utilities providing more than 280 AFY of water for municipal use (for counties having four or less of these utilities),
- Collective Reporting Units (CRUs) consisting of grouped utilities having a common association,
- rural/unincorporated areas of municipal water use (referred to as County-Other and aggregated on a county basis)
- manufacturing (aggregated on a county basis),
- steam electric power generation (aggregated on a county basis),
- mining (aggregated on a county basis),
- irrigation (aggregated on a county basis), or
- livestock (aggregated on a county basis).

Water Utility Profile – A water utility profile includes the following items¹⁶:

- Annual, monthly water use
- Water consumption by customer class
- Population data
- Water system data, and
- Water loss rates

¹⁴ TCEQ rules, 30 TAC 30 TAC 288.1 (18)

¹⁵ Exhibit B, *Guidelines for Regional Water Plan Development*; 4.2.1 Water User Group Description

¹⁶ Chris Brown Consulting.

VIII – MINORITY REPORTS AND TASK FORCE RESPONSE

Minority Report Submitted by Ken Kramer Supported by Robert Cook and Richard LeTourneau

Introduction

The work of the Water Conservation Implementation Task Force is a milestone in the evolution of water resources management in Texas. Combined with the impacts of other recent laws enacted by the Texas Legislature, the recommendations of the Task Force represent a critical step forward in giving water conservation a more prominent role in meeting the state's present and future water needs.

The members of the Task Force, the support staff of the Texas Water Development Board (TWDB), and the consultants retained by TWDB devoted an incredible number of hours and resources to this effort over the past year. The Task Force produced a set of key recommendations for action, including creation of a statewide public awareness program for water conservation.

Perhaps the greatest achievement of the Task Force was the preparation of an extensive guide to Best Management Practices (BMPs) for water conservation. If these BMPs are seriously considered, adopted, and implemented by appropriate water users and water providers, they will enhance greatly the efficient use of water in Texas.

While recognizing and applauding the work of the Task Force, we must acknowledge that the Task Force recommendations do not constitute a bold vision for the future of water conservation in Texas, nor do they tap the full potential for water savings. Moreover, a few of the proposals of the Task Force—such as including “indirect reuse” as a water conservation measure—may undermine progress toward enhanced water conservation.

Missed Opportunities

The Task Force made important strides in promoting water conservation by suggesting quantified targets and goals for consideration by water suppliers in developing their conservation plans and by identifying quantified statewide goals as well. The key goal suggested for water suppliers is the one percent annual reduction in municipal per capita water use (on a 5-year rolling average basis) until a gpcd of 140 or less is achieved.

The 140 figure was a compromise, however, and some major water suppliers such as San Antonio have already reached or done better than that. A major study of the potential for urban water conservation in California released by the Pacific Institute for Studies in Development, Environment, and Security in late 2003 estimated that California's urban water use could be reduced from around 185 gpcd to 123 gpcd through the implementation of readily available technologies (including low-flush toilets, water efficient clothes washers and dishwashers, and finding and repairing leaks).

Urging water suppliers to reduce per capita use by one percent a year until reaching a gpcd of 140 or less will lead to important water savings, if implemented, because several large and medium sized water suppliers currently have gpcd figures far above that number. A more aggressive but achievable suggested goal would save Texas even more water to meet our future needs, if major water suppliers adopted that goal.

A major shortcoming of the Task Force recommendations on targets and goals was the elimination at one point of a suggested goal of a summer to winter average municipal use of 1.6. In other words, typically in Texas cities there is an increase in total municipal water use during the summer months over what such water use is during the winter months. Much of this increase is probably attributed to landscape watering, although there are other factors. The ratio of this increase varies considerably from city to city, however, based on a variety of factors, including service population profiles and programs to educate water customers on various landscaping and outdoor watering choices.

During the course of the Task Force deliberations a recommendation was made and adopted by the Task Force to suggest, as a voluntary state guideline, a goal for municipal water suppliers of no more than a 1.6 summer to winter ratio for water use. At a later point in the work of the Task Force, however, the Task Force eliminated that goal as a compromise that would have retained a voluntary guideline of 125 gpcd for municipal water suppliers. Ironically that “compromise” did not stick, and later the 125 gpcd was compromised to 140 gpcd.

The elimination of the 1.6 summer-to-winter average use as a goal was unfortunate, especially for those municipal water suppliers who observe a significantly higher water use during the summer. The 1.6 goal would have been helpful in focusing attention and resources on those activities that probably have the most significant single impact on annual per capita water use in a number of communities around the state that are cited as having high per capita use.

Thus, the change from a 125 gpcd goal to a compromise 140 gpcd goal and the elimination of the 1.6 summer-to-winter average water use goal, while not fatal to the state’s progress on water conservation, constitute “missed opportunities” to achieve even greater levels of water efficiency for Texas and to save or delay the costs of even more water infrastructure to meet future demands for water.

Problematic Recommendations that May Undermine Water Conservation Progress

The bulk of the recommendations made by the Water Conservation Task Force through the Report to the Legislature and the BMP Guide on the whole should result in progress on water conservation in Texas. There are some recommendations, however, that may undermine that progress. Two examples are the most worrisome in that regard:

- (1) Inclusion of “indirect reuse” as a conservation measure and the attempt to incorporate a credit for “indirect reuse volume” in calculating total gallons per capita per day.
- (2) A potential “loophole” allowing a BMP to be adopted “in whole or in part.”

“Indirect Reuse” as a Water Conservation Measure and as a Credit in Calculating GPCD

The definition of water “conservation” in the Texas Water Code includes the concepts of “recycling and reuse” of water. That was part of an addition to the definition by the Texas Legislature in 1985. At the time the concept of “reuse” was probably interpreted as what we term today “direct reuse.” Direct reuse refers to situations where a water supplier decides to reuse all or a portion of the return flows historically discharged into a river and does so by piping the water to a user before it is returned to the river.

“Indirect reuse,” a term that came into common use after 1985, refers to situations where those return flows are discharged back into the stream, and the water supplier sells that water to someone who will divert it downstream of the point of discharge (or the water supplier will divert it again downstream of the discharge point).

Although some argue that direct reuse and indirect reuse should be treated the same, the fact of the matter is that they are not the same. Indirect reuse requires a bed and banks permit, may incur channel losses and evaporation losses, and involves diversions from a stream. Although indirect reuse projects may be positive and have a number of benefits, it is a stretch to label as “water conservation” a process that discharges water into a stream and diverts it again later. That is qualitatively different from reducing water use or directly reusing water within a water treatment and distribution system.

Considering “indirect reuse” as a water conservation measure is most problematic in terms of the recommendation for incorporating “indirect reuse” into the definition of “total gpcd.” The Task Force initially defined “total GPCD” only as “the total amount of water diverted and/or pumped for potable use divided by total population.” Later a majority of the Task Force added: “Indirect reuse diversion volumes shall be credited against total diversion volumes for the purpose of calculating gpcd for targets and goals.”

Attempting to incorporate indirect reuse diversion volumes as credits against total diversion volumes in order to calculate total gpcd involves a mathematical complexity that undermines the whole effort to develop a simple and uniform calculation of total gpcd. Every time water moves through a water supply system in an indirect reuse process there is a certain percentage of water loss due to percolation, evaporation, and leakage as well as the water consumed. The formula for calculating the actual amount of water that is left after each such cycle of indirect reuse is complex and unique to each water supply system. Trying to incorporate this calculation into total gpcd will probably involve different methods by different water utilities employing indirect reuse – and will result in the same lack of uniformity in calculating gpcd that the Legislature charged the Water Conservation Task Force to eliminate.

In addition the incorporation of indirect reuse into the calculation of total gpcd mixes supply and conservation activities and complicates attempts to get an accurate picture of what a water utility is or is not doing with regard to implementing practices that are aimed at reducing per capita water use. A major concern is that inserting indirect reuse volumes into the calculation of total gpcd sets up a situation where it will be easy for certain utilities to achieve a water conservation

target and goal on paper through manipulation of the definition of total gpcd rather than through the work necessary to actually reduce per capita water use.

The work of the Task Force and progress toward actual conservation of water would be better served if the definition of “conservation” in the Water Code were clarified to exclude “indirect reuse” and if the BMP on reuse were limited to “direct reuse.” At the very least the Task Force should not have allowed the definition of total gpcd to be muddled by attempting to give a credit for “indirect reuse volume,” especially since it is not clear how that credit is going to be calculated. A better though not perfect alternative would be to calculate gpcd without the indirect reuse volume credit but to give those suppliers with indirect reuse projects the opportunity to set goals for those projects in their water conservation plans and periodically report progress toward those goals.

Adopting BMPs “In Whole or In Part”

As initially crafted each BMP developed by the Task Force was structured (with a few exceptions) to be a cohesive and internally integrated water conservation practice that was intended to be adopted (on a voluntary basis) as a “package deal” that needed to be followed closely if its water savings benefits were to be achieved. Water utility representatives pushed successfully to get the Task Force to adopt language that undercut this cohesive approach by suggesting that a BMP could be adopted “in whole or in part.”

While it sounds reasonable to say that a water user should not have to adopt a BMP in its entirety (in order to allow it to be tailored to specific circumstances) the fact is that this approach creates a potential loophole that allows a water user to say that he has adopted a certain BMP but then to disregard most of the steps outlined to follow that BMP, which may seriously decrease water savings that could be achieved by the BMP. How much of a BMP may a water user cut out before it is no longer a best management practice? How may water planners project water savings from adoption of various BMPs if there is no consistency from user to user as to what has actually been adopted?

Conclusion

The Water Conservation Task Force has made a series of important steps forward in laying the groundwork for more efficient use of water in Texas. There is much more that could and should be done, however, to make Texas the leader in water conservation and to maximize the ability of water conservation to meet a significant portion of the state’s future water needs. Care must be exercised that the potential loopholes in the Task Force recommendations do not undermine much of the progress in water conservation that may be made as the result of implementation of its other recommendations.

***Minority Report Submitted by Jobaid Kabir
Supported by Gordon Hill, Robert Cook, and Richard LeTourneau***

Introduction

With the leadership of Kevin Ward and hard work of TWDB staff, the SB 1094 Water Conservation Implementation Task Force has accomplished a lot during the past several months by drafting a report to the Legislature and by developing the Best Management Practice guide for water conservation. I believe that the effort of the Task Force is an important step in meeting future water needs for millions of Texans. Although we have resolved many tough issues, I have two primary concerns with the report, regarding the definition of “Conservation” and the methodology adopted for computing “GPCD.” I believe reuse is a positive way to use alternative water sources, particularly when the need is not for a potable water supply. We should give credit to reuse separately but not connect in any way in defining conservation or in calculating GPCD.

By treating reuse as a conservation measure and giving reuse credit in the GPCD calculation, the Task Force has waded into the middle of a statewide controversy over reuse. Wastewater reuse is the subject of several contested permit proceedings at the TCEQ that are likely to be litigated for many years. The apparent treatment of reuse in the report as a conservation measure feeds additional fuel to that controversy. To clarify this issue, I suggest adding the following text in the minority report for defining “Water Conservation” and the methodology for computing “GPCD.”

Water Conservation

The following definition of “Conservation” and the methodology for computing “GPCD” are based on the principle that reuse does not reduce water consumption, which is the heart of true conservation. Substituting reclaimed water for potable water or raw water is just that, substitution. For example, using reclaimed wastewater to water a golf course does not necessarily result in any change in the total amount of water used for that purpose. Therefore, reuse should not be included in the definition of conservation. Instead, we should define conservation as follows:

“Those practices, techniques, programs, and technologies that will protect water resources, reduce the consumption of water, reduce the loss or waste of water, or improve the efficiency in the use of water so that a water supply is made available for future or alternative uses.”

Methodology of Computing GPCD

It is not appropriate to include reuse in the calculation of GPCD because it artificially lowers the calculated GPCD and leaves a false impression that water savings have occurred where, in fact, only a substitution of water supply may have occurred with no overall reduction in water use. For example, if a city of 1000 people diverts 100,000 gallons of water daily from the river for the water treatment plant and an additional 100,000 gallons daily for irrigating a golf course, its per capita water use would be 200 GPCD. If this city switches to use 60,000 gallons of reused

wastewater daily from the wastewater treatment plant and diverts 40,000 gallons from the river daily for irrigating the golf course, it has used the same volume of water, 200,000 gallons, but switched its sources. Using the methodology proposed by the Task Force, this city could show that it has dropped its per capita water use from 200 GPCD to 140 GPCD, while using the same volume of water and conserving none at all. Therefore, I recommend not giving credit to direct or indirect reuse against total diversion volume for computing GPCD.

Task Force Response

First and foremost, the Task Force recognizes and greatly appreciates the contribution that Ken Kramer and Jobaid Kabir have made to the Water Conservation Implementation Task Force. Without question, their participation has served to produce a final report and BMP Guide that is measurably better – the work of the Task Force is better because they participated! The Task Force also believes that their minority reports serve to call attention to issues that need further consideration and should not be dismissed as the State of Texas moves forward to take water conservation to the next level.

Mr. Kramer states that “the Task Force recommendations do not constitute a bold vision for the future of water conservation in Texas nor do they tap the full potential for water savings.” Mr. Kramer’s report focuses on three key areas:

1. gallons per capital per day (gpcd) goals and targets are not sufficiently challenging,
2. inclusion of “indirect reuse” as a conservation measure, and
3. the “loophole” allowing a BMP to be adopted “in whole or in part.”

Mr. Kabir’s minority report objects to the inclusion of “reuse” as well, both in the definition of conservation and in the methodology of computing gpcd. Therefore, the Task Force would like to respond to each of these three issues.

Issue #1 – Goals and Targets

The Task Force spent a lot of time debating this issue and made many attempts to craft goals and targets that were fair yet still caused water suppliers to achieve significant water use improvements. The Task Force unanimously recognized some of the key factors that affect water consumption – demographics, population, climate, industrial use, institutional use, etc. These factors vary significantly between municipalities across the state and often produce profound differences in water consumption metrics. While the Task Force would have preferred to outline a model for setting targets and goals that fairly recognized the key factors that affect consumption, the simple fact is that sufficient data do not currently exist to make a reasonable recommendation. TWDB has already taken steps to modify its data collection, and the Task Force believes that the Water Conservation Advisory Council in conjunction with TWDB and TCEQ should develop more definitive guidance for goals and targets when sufficient data are available to make an informed decision.

However, of even greater significance than the debate over goals and targets is the collective set of recommendations that the Task Force has made that we believe collectively will allow the State of Texas to take water conservation to the next level by instituting a public awareness program, expanding local and statewide public recognition, developing a library of water conservation information, and recommending that water suppliers must **ESTABLISH THEIR OWN GOALS AND TARGETS**. The Task Force strongly supported the concept of local control over water management. It would be impossible to claim any measure of success in water conservation without some metrics to measure water use and having water users establish goals and targets to reduce consumption. Conservation can be viewed as “negative demand,” and the Task Force is completely committed to the need to have goals and targets for water conservation to reduce demand. This position is the true vision and the Task Force will not

compromise on this recommendation. In time, the 140 total gpcd, the 50 residential gpcd, and the one percent annual improvement must all be replaced with more meaningful goals and targets as data become available to set more meaningful stretch goals and targets. Unfortunately, today we cannot do that, and the Task Force is not prepared to make any recommendation based on conjecture that is not supported by solid information. The Task Force has not compromised; we in fact have taken the best position that is reasonable at this time.

Issue #2 - Indirect Reuse

Again, this issue has been extensively debated by the Task Force, and in the final analysis the Task Force majority believes that there are many ways to improve the water consumption in Texas besides simply focusing on ways to get people to use less. In order to achieve the best use of the fresh water in Texas we must consider many different options to apply the four basic R's – reduce, recycle, reuse, and replace. Any time that we can replace the demand for fresh water with water that is discharged from another use, or with water from another source, conceptually the demand for fresh water is reduced. If an industry can use brackish water instead of fresh water, the demand for fresh water is reduced. The Task Force strongly believes that this is good for Texas, and we believe that this is conservation!

Mr. Kramer and Mr. Kabir do not object to indirect reuse projects in principle. Their objections relate to how indirect reuse is considered in the calculation of consumption and the impact that indirect reuse could have on downstream appropriations. The Task Force majority believes that the bigger issue is to encourage all types of conservation and that how calculations are done is a secondary concern. The recommendations concerning gpcd calculations are for the purpose of benchmarking a water supplier's progress toward achieving water conservation goals and targets over time. Comparisons against other water suppliers are much more problematic with numerous variables to consider. **The Task Force recommendation to include indirect reuse credits in the gpcd calculation should in no way be construed to give indirect reuse any preferential right or special appropriation.** If indeed each water supplier will calculate consumption, set goals and targets for conservation, implement conservation plans, and measure improvements over time, then how they choose to measure their results is less important than the fact that results are achieved. The Task Force chooses to encourage all forms of water conservation and to not be as concerned with the method of calculation.

Issue #3 – BMP “loophole”

What Mr. Kramer characterizes as a “loophole” in the application of BMPs is viewed by the majority of the Task Force as providing flexibility for water users to use the BMPs or parts of BMPs that apply to their specific use in developing a water conservation program. This flexibility will allow the water user to implement water conservation in a manner that will be cost effective and will allow the user to focus his time and resources on those measures that offer the greatest opportunities. It would be virtually impossible to prepare a BMP, or even a set of BMPs, that fits every situation. For that reason, the Task Force properly recognized that the BMP Guide should be viewed as a resource and not as requirements. It is important that the use of BMPs be flexible because they are designed to assist in the implementation of water conservation and should in no way cause water users to commit time and resources to do

anything that does not add value to the conservation effort and does not focus on achieving the goals and targets that the user has established.

In conclusion, the Task Force appreciates the minority reports that Mr. Kramer and Mr. Kabir have submitted because they indeed have served to emphasize the need to work on these very important issues into the future. The Task Force report should not be viewed as the conclusion of an in-depth look at water conservation. Instead, the report should be the map by which we begin the next phase of water management in Texas. Implementation was the most significant work of the Task Force title and this report, we believe, contains the steps that will help water users, water districts, and regional planning groups to take water conservation to the next level for the benefit of all Texans.

APPENDIX A – History of Water Conservation in Texas

In 1917, the citizens of Texas approved a constitutional amendment (Tex. Const. Article 16, Section 59) enabling the Legislature to pass all such laws as may be appropriate to effect “the conservation and development of all of the natural resources of this State . . . including . . . the conservation and development of water.” The term “conservation,” as used in this context, is generally understood to mean development of water resources through dams and reservoir projects by governmental entities.

In 1985, the Texas Legislature expanded the definition of “conservation” in the Water Code to include reduction of water consumption, more efficient use of water, and increased recycling and reuse of water. This definitional change occurred in tandem with passage of legislation requiring retail water suppliers that receive state funding, and all recipients of new water rights or amendments to existing water rights, to implement a water conservation plan and/or adopt a drought contingency plan.

Currently, “conservation” is defined in Chapters 11.002 and 15.001 of the Texas Water Code as

- (1) the development of water resources; and
- (2) those practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.

In 1991, the Texas Legislature adopted the State Water Savings Performance Standards for Plumbing Fixtures Act, which established low-flow performance standards for plumbing fixtures sold in Texas, including toilets, showerheads, faucet aerators, and urinals. The Federal Energy Policy Act of 1992 established certain plumbing-efficiency standards nationally, including the 1.6-gallon-per-flush toilet standard.

SB 1, the omnibus water legislation passed in 1997, contained water conservation provisions requiring water-rights holders (municipal and industrial rights of 1,000 acre-feet or more a year and irrigation rights of 10,000 acre-feet or more a year) to develop, submit, and implement water conservation and drought contingency plans. In addition, SB 1 expanded sales tax exemption for pollution-control equipment to include water-conserving equipment for manufacturers, allowed local authorities to grant property tax exemptions for water conservation, and granted TWDB authorization to use principal from the Agricultural Trust Fund to provide financial incentives and/or low-cost loans for the installation of agricultural water conserving devices.

The 2002 State Water Plan documents a 22-gpcd savings from year-2000 rates of municipal use by 2050, resulting primarily from continued implementation of more efficient plumbing code requirements. These water conservation measures are projected to save an estimated 976,000 acre feet per year (AFY) by 2050.

78th Texas Legislature

Two events thrust water conservation and water-use efficiency to the forefront of water issues considered by the 78th Legislature:

- Findings and recommendations of the Texas Joint Interim Committee on Water Resources
- The importance of water conservation in strategies proposed by Regional Planning Groups in the 2002 State Water Plan Findings

In 2003, the 78th Texas Legislature passed the following water-conservation-related bills:

HB 645 (Puate; Armbrister)

Relating to prohibiting the creation or enforcement of certain restrictive covenants that undermine water conservation.

HB 645 prohibited a property owners' association from including or enforcing a provision in a dedicatory instrument that prohibits or restricts a property owner from

- implementing measures promoting solid-waste composting of vegetation, including grass clippings, leaves, or brush, or leaving grass clippings uncollected on grass;
- installing rain barrels or a rainwater harvesting system; or
- implementing efficient irrigation systems, including underground drip or other drip systems.

HB 1152 (Puate; Estes)

Relating to the authority of certain nonprofit water-supply corporations and sewer-service corporations to establish and enforce customer water conservation measures.

Prior to the passage of HB 1152, nonprofit water-supply corporations did not have the authority that water-supply districts and municipalities, as governmental entities, had to enact mandatory customer water-use practices, such as lawn watering restrictions and prohibition of wasteful water-use practices.

HB 1152 amended the Texas Water Code to provide nonprofit water-supply corporations the statutory authority to enforce reasonable customer water conservation practices and to prohibit wasteful or excessive water use by allowing assessment of reasonable penalties.

HB 2660 (Puate; Lucio)

Relating to the establishment of minimum levels of water conservation in water conservation plans.

H.B. 2660 required TCEQ and TWDB, by September 1, 2004, to jointly develop model water conservation programs for different types of water suppliers that suggest best-management practices. Target goals for model water conservation programs developed as a result of TCEQ and TWDB implementation of this provision in HB 2660 are not enforceable requirements.

Beginning May 1, 2005, all water conservation plans required to be submitted to TCEQ with an application for a new or amended water-rights permit or to TWDB with an application for financial assistance must include specific, quantified, 5- and 10-year targets for water savings. The entity preparing the plan establishes the targets. Targets must include goals for water-loss programs and goals for municipal use in gallons per capita per day.

HB 2661 (Puente; Armbrister)

Relating to the use of graywater.

Household uses of water in clothes washing machines, showers, bathtubs, hand-washing lavatories, and sinks can produce approximately 100 gallons of excess water per day in the typical Texas household. HB 2661 required TCEQ, by rule, to adopt and implement minimum standards for certain uses of this “graywater.” The legislation allows, without the need to acquire a permit, the use of less than 400 gallons of graywater each day for certain private uses and with certain design criteria.

HB 2663 (Puente; Lucio)

Relating to the establishment of quantifiable goals for drought contingency plans.

H.B. 2663 required TCEQ to establish quantifiable goals for drought contingency plans. TCEQ and TWDB by joint rule were directed to identify quantified target goals for drought contingency plans that wholesale and retail public water suppliers, irrigation districts, and other entities may use as guidelines in preparing drought contingency plans. Target goals for water conservation identified by TCEQ and TWDB for consideration by wholesale and retail public water suppliers, irrigation districts, and other entities in preparing drought contingency plans are not enforceable requirements.

By May 1, 2005, drought contingency plans required by TCEQ must include specific, quantified targets for water-use reductions to be achieved during periods of water shortages and drought. The bill requires TCEQ and TWDB to jointly develop model drought contingency programs for different types of water suppliers that suggest best-management practices.

HB 3338 (Puente; Armbrister)

Relating to the performance of a water audit by a retail public utility providing potable water.

HB 3338 required retail public water utilities to perform water audits in order to increase water conservation in Texas. Every five years, a retail public utility providing potable water is required to perform and file with TWDB a water audit computing the utility’s most recent annual system water loss. TWDB was directed to develop appropriate methodologies and submission dates for the required water audits for specific categories of retail public water utilities and, by doing so, ensure that compliance is financially feasible for the category of public utility for which it is developed.

TWDB is required to compile information included in the water audits according to specific categories of retail public water suppliers and according to regional water planning areas. The Planning Group is required to use the information to identify appropriate water management

strategies in the development of a Regional Water Plan. HB 3338 authorized TWDB to provide certain financial assistance to political subdivisions for water-supply projects only if the required water audit has been completed and filed.

SB 1053 (Duncan; Geren)

Relating to certain water-pollution and conservation programs administered by the Texas Water Development Board.

S.B. 1053 consolidated into one program three existing financial assistance programs administered by TWDB related to agricultural water conservation. The bill provided for linked deposits to eligible lending institutions for approved loans for non-point-source projects under the Clean Water State Revolving Fund Program and Agricultural Water Conservation Program. In addition, the legislation authorized TWDB to provide financial assistance to demonstration projects, technology transfers, and educational programs.

SB 1094 (Duncan; Puente)

Relating to the creation of a task force to evaluate matters regarding water conservation.

The Interim Report of the Texas Joint Committee on Water Resources to the 78th Legislature recommended that TWDB and the Planning Groups work together to develop recommendations on how to define and evaluate water-use efficiency measures needed for regional water planning. In response to that recommendation, SB 1094 established the Water Conservation Implementation Task Force in order to review, evaluate, and recommend optimal levels of water-use efficiency and conservation for all of Texas. In addition, the legislation directed the Task Force to develop a best-management practices guide for use by Planning Groups and political subdivisions responsible for water-delivery service.

Reports and Research

2002 State Water Plan

The 2002 State Water Plan, which reflects cumulative effects of the 16 regional water plans, recognized conservation-based water management as one of the most effective strategies of helping ensure that future water needs of Texans are met. Water conservation has tremendous potential for extending existing supplies, reducing consumer costs, and meeting environmental and other natural resources needs. Water conservation may provide a means of making additional water supplies available that is more economical than more expensive water-supply solutions, such as reservoirs and well fields.

According to the 2002 State Water Plan, the inability of current water sources to meet demands for water during drought conditions will increase from 2.4 million (AFY) in 2000 to an estimated 7.5 million AFY in 2050. Required water conservation strategies reflecting efficient plumbing-fixture codes established by state and federal law and recommended water conservation strategies included in the State Water Plan will each save an estimated 1 million AFY,

respectively (2 million AFY combined), by 2050. This sum is significant and represents a vital element of the state's plan to address the projected 7.5 million AFY shortfall.

Conservation was the second most frequently recommended water management strategy (29 percent) in the 2001 regional water plans. However, in many instances these strategies and the manner in which they were to be implemented were not clearly defined. Regional Water Planning Groups (Planning Groups) expressed difficulty in the first round of regional water planning in developing a science-based evaluation for the implementation of water conservation strategies. This difficulty hindered their ability to cost-compare conservation measures in an apples-to-apples manner with more conventional strategies of water development.

A common thread in the development of recommendations in the regional water planning process has been the desire to implement plans in a way that ensures that future needs of all Texans are met. However, without definitive implementation of recommended water conservation strategies in the 2002 State Water Plan, Texans' ability to meet their future water needs will be significantly diminished.

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

The Texas Joint Interim Committee on Water Resources was charged, in part, by the 77th Texas Legislature to study and make recommendations on increasing the efficient use of existing water resources. On June 12, 2002, the committee received invited testimony on this charge from individuals representing TCEQ, Texas Parks and Wildlife Department, Texas Department of Agriculture, Texas Water Resources Institute, the Texas Section of the American Water Works Association, and the Lower Colorado River Authority.

In its report to the 78th Texas Legislature, the Interim Committee encouraged all interested legislators and parties to closely inspect a study produced by Texas A&M University's Texas Water Resources Institute titled *Efficient Water Use for Texas: Policies, Tools, and Management Strategies* (published in September 2002). "This study," says the Joint Committee in the report, "is a comprehensive analysis of possible water conservation and efficiency measures and strategies that could make significant contributions in meeting Texas' future water needs."

In addition to this recommendation, the Interim Committee submitted the following water conservation-related 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 TWDB and the 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 Regional and State Water Plans,
- Direct the TWDB to consider municipalities' existing water conservation efforts in evaluating eligibility of applications for state financial assistance,

- 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, and
- 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.

APPENDIX B – Task Force Biographical Information

Kevin Ward (Presiding Officer) has been the Executive Administrator of the Texas Water Development Board (TWDB) since 2002. Mr. Ward has over 20 years, progressive experience in public and private sector governmental consulting and management positions.

Norman Bade has worked for the Natural Resources Conservation Service (NRCS) for over 30 years and is currently the Assistant State Conservationist for Programs for NRCS in Texas. Mr. Bade directs the administration of all Farm Bill programs in Texas for NRCS and coordinates the activities of the State Technical Committee.

Carole Baker is the Director of Intergovernmental Relations at the Harris-Galveston Coastal Subsidence District, the Director of the Board of Texas Water Conservation Association, Legislative Chair & Liaison to the Texas Section American Water Works Association, a founding Member & Director of the Texas Water Wise Council, and is on the Board of Directors of the Texas Water Foundation.

H. P. "Bo" Brown, Jr., is Chairman of the Llano Estacado Regional Water Planning Group and Chairman of the Lubbock Water Advisory Commission. He is a co-owner of Coyote Lake Feedyard, Inc., in Bailey County, Texas, and is actively involved in farming and ranching operations in West Texas. He is a partner in the law firm of Jones, Flygare, Brown & Wharton.

Luana Buckner has been the General Manager of the Medina County Groundwater Conservation District for 12 years, is a Member of the Edwards Aquifer Authority (EAA) Board of Directors and chair of the EAA Permit and Legislative Committees, and serves as an alternate on the Region L Planning Group. Ms. Buckner is a member of the Texas Alliance of Groundwater Districts and the EAA Board's Aquifer Management Planning Committee, and she is a Vice President of the Texas Water Conservation Association.

John Burke has been the General Manager of Aqua Water Supply Corporation for 17 years, and is the Chairman of the Lower Colorado Regional Water Planning Group. Mr. Burke was formerly the President of the Lost Pines Groundwater Conservation District and the President of Texas Rural Water Association.

Greg Carter is a Senior Engineer with AEP-Central Power and Light Company and is a Region N Planning Group member. He has 18 years of experience at AEP, with an emphasis on water rights activities for the past eight years.

Robert Cook has been the Executive Director of Texas Parks and Wildlife (TPWD) since 2002 and has worked in various managerial positions, including Chief Operating Officer, at TPWD headquarters since 1990. Previously he was a wildlife biologist and Ranch Operations Manager at Shelton Land and Cattle Company, manager at the Kerr Wildlife Area, and the Statewide White-Tailed Deer Program Leader.

Kenneth Dierschke is an agricultural producer in the San Angelo area, is the President of the Texas Farm Bureau, and is an agriculture representative for the Region F Water Planning Group.

Richard Egg has been an Engineer with the Texas State Soil and Water Conservation Board for six years. Previously, he worked in the Agricultural Engineering Department at Texas A&M as a research engineer for 17 years.

Dr. Calvin Finch has been the Conservation Director at San Antonio Water System since 2000, managing 18 staff and \$7 million in annual programming. Dr. Finch was the County Extension Director in Travis County before joining SAWS.

Marilyn Good is the Communications Director of the Texas Nursery and Landscape Association and the founder, facilitator, and twice president of the Texas WaterWise Council. Ms. Good is a stakeholder advisor for the new Irrigation Technology Center, an advisor to the Texas SuperStar program, and a stakeholder representative in development of the 2002 State Water Plan.

Gordon Hill is the Manager of the Bayview Irrigation District and is an international banker and bank president. He is a member of the Rio Grande Planning Region, the Lower Rio Grande Authority, the Lower Rio Grande Valley Water District Managers Association, and the Texas Irrigation Council.

Dr. Allan Jones is the Director of the Texas Water Resources Institute, Associate Director of the Texas Agriculture Experiment Station in College Station, and Assistant Vice Chancellor of Texas A&M's Agriculture Program. He is a crop physiologist whose research career has focused on water use efficiency, water quality management, and simulation of complex cropping systems.

Dr. Jobaid Kabir is the Manager of the Corporate Environmental Compliance Department at the Lower Colorado River Authority (LCRA) and has been an engineer at LCRA for 16 years. Previously, he was Manager of Water Resources Planning at LCRA, where he provided leadership in revising the Water Management Plan.

Dr. Ken Kramer is the Director of the Lone Star Chapter of the Sierra Club. Dr. Kramer has served on numerous advisory committees to state and local agencies and officials. Until 1995, he co-chaired the TNRCC's Task Force 21, the primary committee advising the TNRCC on industrial air quality, water quality, and waste management issues.

Richard LeTourneau has been the owner of Ocean Islands International, Inc., for 23 years. He is an executive committee member at large and is the environmental interest member for the North East Texas Regional Water Planning Group and is a trustee for the Texas Committee on Natural Resources.

Gene Montgomery is the External Affairs Director of Oxy Permian and has been a member of the Llano Estacado Regional Water Planning Group for five years. Mr. Montgomery is the Chairman of the Regulatory Practices Committee of the Texas Oil & Gas Association. He is also on the Permian Basin Petroleum Association Legislative/Regulatory Committee.

James Oliver has been the General Manager of Tarrant Regional Water District for 17 years. Mr. Oliver is a past president and board member of the Texas Water Conservation Association and is a past Chairman of the Water Resource Division of the American Water Works Association.

Rusty Osborne has been the Facilities Manager at The University of Texas at Austin for 20 years. He has participated in the Region K Water Planning Group. Mr. Osborne's water conservation programs received a letter of Recognition of Exemplary Water Conservation Programs from TWDB.

Anai Padilla has been the Water Conservation Manager for El Paso Water Utilities Public Service Board (PSB) for 10 years, overseeing conservation programs designed to meet the goals of achieving and maintaining a 20% reduction in per capita use. She was formerly the County Extension Agent in El Paso, where she initiated the "Water Smart" program.

James Parks is the Executive Director of the North Texas Municipal Water District, with 25 years of experience in the water industry. He is also the Chairman of the Region C Water Planning Group. He is a member of the American Water Works Association, the Texas Water Conservation Association, and the National Water Resources Association.

Trey Powers is currently Assistant Commissioner for Legislative Affairs for the Texas Department of Agriculture. Previously he was a Committee Clerk for the Senate Subcommittee on Agriculture, as well as Legislative Aide for Senator Haywood.

Richard Sawey is a Vice President and Water Resources Client Officer for CDM, a water resources and environmental engineering consulting firm. Mr. Sawey currently serves on the Executive Board of Stream and Valleys, Inc., is a past Chair of the national Water Resources Division of AWWA, and formerly was Director of the Fort Worth Water Department and Director of Utilities for the City of Amarillo.

Wilson Scaling is the Vice-Chairman of the Region B Water Planning Group and a lifetime rancher. He serves on the Little Wichita Soil & Water Conservation District Board and was Chief of USDAs Soil Conservation Service (now the Natural Resources Conservation Service) from 1985 to 1990.

Tully Shahan maintains a law practice in Brackettville, has been the County Attorney for Kinney County for 25 years, is the Director of West Nueces-Las Moras Soil and Water Conservation District, and is the environmental interest member of the Region J Water Planning Group.

Glenn Shankle has been the executive director of the Texas Commission on Environmental Quality (TCEQ) since July 14, 2004. Mr. Shankle served the prior six years as the deputy executive director for the TCEQ. With more than 27 years of state service, Mr. Shankle's tenure in state government reflects a history of administrative leadership and accomplishment in key executive management positions throughout the state, including deputy comptroller, director of enforcement for the Comptroller of Public Accounts, and director of the Texas Senate Personnel Office.

Jack Tatum has been the Water Resources Manager of Sabine River Authority (SRA) for two years and has worked for SRA in various management roles since 1971. He is a member of the Texas Water Conservation Association, the National Water Resources Association, and the Water Environment Federation.

Jeff Taylor is the Deputy Director of the Public Utilities Division in the Department of Public Works and Engineering for the City of Houston. He has 20 years of civil engineering experience in planning, design, and permitting of water, wastewater, drainage, and transportation projects and was previously with Brown & Root, Inc.

David Wheelock has been a Principal Engineer with the Brazos River Authority since 2002, was previously Vice-President of HDR Engineering Inc. for nine years, and has 24 years experience as a consultant with various engineering firms. While at HDR, he was the project manager for the 2002 Brazos Region G Water Plan.

Will Wilde is the Public Works Director for the City of San Angelo, has served as Regional Director of the Texas Municipal Utilities Association, and is the Director of the Central West Texas Branch of the Texas Public Works Association. He has been a member of the Region F Water Planning Group since 1998.

C.E. Williams has been the General Manager for the Panhandle Groundwater Conservation District for 13 years and is Chairman of the Panhandle Water Planning Group. He is currently on the Board of Directors of the Groundwater Management Districts Association and the Texas Water Conservation Association and was formerly president of the Texas Alliance of Groundwater Districts, the GMDA, and the TWCA.

APPENDIX C – Initial Public-Awareness Campaign Partners

Since the Task Force adopted their recommendation on a statewide public awareness program, there has been great interest in taking the necessary steps to implement this program. In March 2004 the Texas Water Development Board (TWDB) entered into an agreement with the Texas Section of the American Water Works Association (TXAWWA) so that funds could be solicited by TXAWWA and made available to the TWDB Water Assistance Fund and earmarked for the initial market research phase. The 35 partners who made this effort possible include:

Alan Plummer Associates
American Electric Power
Aqua Water Supply Corp
Austin Lawn Sprinklers Association
Brazos River Authority
City of Austin
City of Corpus Christi
City of Dallas
City of Fort Worth
City of Houston
City of San Angelo
Edwards Aquifer Authority
Evergreen Underground Water Conservation District
Ewing Irrigation
Fort Bend Subsidence District
Harris Galveston Subsidence District
High Plains Underground Water Conservation District
Houston Gulf Coast Irrigation Association
Lone Star Irrigation Association
Lower Colorado River Authority
National Wildlife Federation
North Harris County Regional Water Authority
North Texas Municipal Water District
Panhandle Groundwater Conservation District
San Antonio Water System
Sierra Club Lone Star Chapter
South Plains Underground Water Conservation District
Tarrant Regional Water District
Texas Alliance of Groundwater Districts
Texas Farm Bureau
Texas Nursery & Landscape Association
Texas Turf Irrigation Association
Texas Water Conservation Association
Trinity River Authority
West Harris County Regional Water Authority