

Appendix I

Policy Recommendations from Stakeholders

Stakeholders included representatives of the Planning Groups, various State agencies, public interest, water and environmental associations, groundwater conservation districts, river authorities, cities, utilities, water-financing and legal representatives, and other members of the public actively involved in water supply planning and water policy issues. They were charged with identifying policy issues and recommending policy changes, if any, to improve the likelihood (including reducing impediments) of, and assist in implementing the regional water plans.

At the first of five stakeholder meetings, the group evaluated, refined, and ranked in order of importance 11 policy issues derived from input from Planning Groups, staff from State natural resource agencies, members of the Legislature and its staff, water interest groups, and the general public. The policy issues, in order of ranking, included surface water, water infrastructure financing, environmental protection/flow maintenance, agriculture/rural, groundwater, water marketing, conservation/drought management, water quality, nontraditional water management strategies, planning and implementation, and data collection and information.

At subsequent meetings, stakeholders and additional experts met in issue-specific subgroups (Roundtable Groups) to develop recommendations for each policy issue. Policy issues and recommendations were developed during face-to-face meetings and electronic discussions using an Internet discussion forum (similar to a chat room). Upon completion by a Roundtable Group, each policy paper containing recommendations was presented to the stakeholders for possible recommendation to the TWDB for inclusion in the 2002 State Water Plan.

The 2002 State Water Plan represents an expansion of efforts, started in 1992, in using consensus for developing the 1997 State Water Plan. The 1997 State Water Plan relied on consensus to improve cooperation in implementation and policy development with the TWDB, TNRCC, and TPWD, and, to a lesser extent, various other water interests and the general public. The 2002 State Water Plan expands the consensus development process to include a diverse set of water-related representatives from throughout the State.

Consensus support from the stakeholders and Roundtable Groups for each recommendation and policy issue was a goal of the stakeholder process. If consensus was not attained, the various positions were noted and the degree of support for each recommendation was indicated. If needed, alternative opinions were represented in each policy recommendation paper and were submitted to the TWDB for consideration in the 2002 State Water Plan. See Volume III for the complete text and voting results of the Stakeholders Report.

Surface Water Issues

A. Reuse

Recommendation

1. The natural resources agencies, with stakeholders, shall develop a report to examine benefits and impacts related to reuse for each river basin in the State and identify future information needs and policy options. (Approved at stakeholders meeting by majority.)

B. Subordination Agreement

Recommendation

1. TNRCC, TWDB, and TPWD should work with stakeholders to assess impacts of subordination on other water rights and environmental water needs.

C. Recreation

Recommendation

1. Reservoir owners should be encouraged to voluntarily provide an opportunity for discussion and public education concerning use of a reservoir for water supply and for recreational purposes.

D. Surface Water and Groundwater Model Interaction

Recommendation

1. The TNRCC and TWDB should jointly develop a process that would propose linking Water Availability Modeling (WAM) and Groundwater Availability Modeling (GAM) in areas where there is significant groundwater and surface water interaction, including recommendations for funding and statutory changes necessary to facilitate this linkage. The agencies should develop this process using significant involvement of major stakeholders.

E. Interbasin Transfer

Recommendation

1. The Legislature should direct natural resource agencies, with stakeholders, to develop a report with recommendations concerning interbasin transfers, which would include different needs and circumstances, with impacts, within each regional water planning area/basin of the State. (Approved at stakeholders meeting with one dissenting opinion.)

F. Encourage System Operation

Recommendation

1. TWDB should consider clarifying its rules to encourage system operations, where appropriate, including potential systems that cross planning area boundaries and groups in the regional water planning process.

G. Flood Management

Recommendations

The Legislature should consider

1. Encouraging groundwater conservation districts to cooperate with surface water entities and water rights holders to explore opportunities for enhancing groundwater recharge using stormwater runoff.
2. Taking all appropriate actions to ensure timely updates to FEMA maps where needed.
3. Legislating to require counties and cities to aggressively enforce floodplain regulations.

H. Permit Exemption

Recommendation

1. TNRCC should work with the Texas State Soil and Water Conservation Board and Natural Resources Conservation Service to develop and seek funding for a program to estimate the magnitude, distribution, and general location of exempt water storage facilities in priority areas.

I. Water Rights Administration and Enforcement

Recommendations

1. The Legislature should evaluate whether there is a need for a watermaster program in each river basin of the State. The Legislature should consider requiring the implementation of watermaster programs where appropriate.
2. The Legislature should consider providing additional funding to TNRCC to ensure effective water management, water education, and water rights enforcement for Texas.

Financing Water Infrastructure

A. State Assistance

Recommendations

1. The role of State assistance programs needs to be expanded to ensure that problems are addressed and long-term State goals are achieved. State assistance should be provided as required to supplement local efforts to
 - a. achieve goals established by regional water planning groups for implementation of recommended water management strategies that the State decides merit assistance;
 - b. support cost-effective regional projects, including, but not limited to, the current State Participation Program;
 - c. support disadvantaged communities or communities with limited access to traditional capital markets with low-interest loans and grants, including consolidation subsidies to encourage cost-effective regional solutions; and
 - d. support funding of nontraditional solutions.
2. Stakeholders were unable to agree on the introductory language to use for the following recommendation. Therefore, two introductory sentences are proposed.

Recommended at stakeholder meeting by majority: State priority-ranking criteria for projects receiving State assistance should include the following (not listed in priority order):

Recommended at the stakeholder meeting by minority: In programs where demand exceeds funding, the State should adopt priority-ranking criteria for projects receiving State assistance, which should consider the following (not listed in priority order):

- a. Higher priority for projects to address urgent public health and safety needs.
- b. Higher priority for creation of regional or multicomunity water and wastewater systems.
- c. Higher priority for projects that meet the needs of small, rural, disadvantaged, or geographically isolated communities.
- d. Lower priority for projects that cannot demonstrate managerial or technical expertise necessary to complete a project. A **minority at the stakeholders meeting** expressed concern about potentially penalizing small, rural, or disadvantaged communities because they may lack certain expertise; however, the recommendation was accepted by consensus.
- e. Higher priority for water supply projects derived from reuse.
- f. Higher priority for projects with environmental benefits.
- g. **Recommended at the stakeholder meeting by minority:** Lower priority for projects with environmental damage. This recommendation generated a significant amount of discussion. Some alternative suggestions to item f were suggested as a compromise; however, stakeholders were unable to reach a consensus on any of the proposed suggestions.
- h. Higher priority for projects with demineralization.
- i. Higher priority for projects that produce more water with less total funding.

- j. Higher priority for projects that maximize conservation, including agriculture.
 - k. Staff support to implement priority projects.
3. The following dedicated funding sources should be considered to enhance the State's ability to assist local government in implementing water infrastructure projects:
 - a. Increased agricultural funding sources (Federal).
 - b. Increased State Revolving Fund funding.
 - c. **Recommended at the stakeholder meeting by majority:** Bottled water fee. A **minority at stakeholders meeting** suggested that this item be deleted because it will most likely be discussed by the Joint Committee on Water Resources (created by Senate Bill 2, 77th Texas Legislature, Regular Session) as part of the interim charges.
 - d. General revenue.
 - e. Statewide bond issue.
 - f. **Recommended at the stakeholder meeting by majority:** Statewide sales tax on water and wastewater service. A **minority at the stakeholders meeting** suggested that this item be deleted because it will most likely be discussed by the Joint Committee on Water Resources (created by Senate Bill 2, 77th Texas Legislature, Regular Session) as part of the interim charges.
 4. The stakeholders recommend that the following items from the Conservation/Drought Management section be included here:
 - a. The Legislature should consider providing funds for loans to be made available for municipal conservation program activities, such as fixture replacement and other incentive programs.
 - b. The Legislature should consider expanding tax exemptions for fixtures and equipment that are identified to lower water use and increase available supply.
 5. The TWDB should remove unnecessary administrative burdens related to State Revolving Fund funding within the authority of TWDB.
 6. Multiple purpose projects should be encouraged to take advantage of economies of scale and cost sharing.
 7. A comprehensive financing package using State and Federal agency funding mechanisms should be developed.
 8. Training programs in financial and technical management should be developed and outreach assistance provided to communities who lack these skills so that they can access financial assistance and implement water infrastructure projects.

B. Public-Private Partnerships

Recommendations

1. Encourage public-private partnerships in implementing solutions to water needs where appropriate.
2. Educational materials and programs should be developed and distributed on the Web site to assist water resource managers in becoming familiar with the benefits and risks of private investment in water infrastructure projects.
3. Statutory changes should be considered to ensure that State financial assistance could be made available to public-private partnerships.

Environmental Protection/Flow Maintenance

A. How to appropriately define and provide for instream flows and freshwater inflows to bays and estuaries?

Recommendations

1. In the absence of site-specific studies, the consensus criteria, as amended or modified by the natural resource agencies, should continue to be applied to water development projects for planning purposes.
2. A comprehensive instream flow study program should be implemented by the natural resource agencies as soon as possible in order to evaluate the ecological needs of priority stream segments in a timely manner, pursuant to recent statute directives (Senate Bill 2).
3. The existing interagency freshwater inflow study program previously established by the Legislature should continue to be adequately funded for the evaluation of inflow needs in the major and minor bays and estuaries, as conditions change along the coast and more data become available.
4. The Legislature should consider providing funding for voluntary conservation activities in which the majority of water saved would be made available to meet environmental water needs. (Approved at stakeholder meeting with one dissenting opinion.)
5. The natural resource agencies and institutions of higher learning should implement programs to educate the public about the need for instream flows and freshwater inflows to maintain the ecological health and productivity of the State's rivers, bays, and estuaries.
6. The Legislature should consider establishing policies that will facilitate the natural resource agencies and water rights holders in providing environmental flows by using the Texas Water Trust or some similar method or concept.
7. The Legislature should consider directing the natural resource agencies to establish a process or program, such as the Water Trust, to develop voluntary agreements with existing water rights holders for combined system operation of water supply systems to improve efficiency in such a way as to release water for the environment while not significantly reducing the availability of State water for diversion and beneficial use shared under the existing permits. The program should include proposed methods for financing any such agreements and the infrastructure necessary to implement them.
8. The Legislature should consider establishing criteria and directing the natural resource agencies to develop procedures for reserving water in the river basins as environmental flows to protect and maintain the living natural resources of the State. (Approved at stakeholder meeting with one dissenting opinion.)
9. The Legislature should evaluate whether there is a need for a watermaster program in each river basin of the State. The Legislature should consider requiring the implementation of watermaster programs where appropriate.
10. The Legislature should consider directing and funding TNRCC to implement its water rights cancellation authority. (Approved at stakeholder meeting with four dissenting opinions.)
11. The Legislature should consider directing TNRCC, in coordination with TWDB and TPWD, to evaluate the status of environmental flows on a river basin basis assuming various scenarios, including the full exercise of existing rights.
12. Existing property rights in water must be respected as Texas works to resolve the increasing competition for limited water supplies between consumptive use of water and environmental values. (Approved at stakeholder meeting with eight dissenting opinions.)

B. How to encourage voluntary transfers of existing rights to environmental purposes?

Recommendation

1. The natural resource agencies, in cooperation with stakeholders, should prepare a report to the Joint Legislative Committee and the Water Advisory Council identifying actions considered necessary and appropriate to increase the effectiveness of the Texas Water Trust.

C. What is an appropriate policy to ensure/protect needed springflows?

Recommendation

1. The Legislature should encourage groundwater conservation districts to include in their management plans an evaluation of the impacts of the plan on major springs and related surface water supplies.

D. What criteria should be used in determining which water bodies are monitored?

Recommendations

1. The Legislature should consider appropriating adequate State matching funds to complement all available Federal funds in order to complete the “core” network and add major springs to the State-Federal monitoring network.
2. The TWDB should seek more cooperators among industries, political subdivisions of the State (e.g., cities, river authorities, surface and groundwater conservation districts), Federal agencies, and other potential sponsors to fund the installation, operation, and maintenance of the new stream- and springflow gages that will be needed for the effective management of water resources in the future.
3. The natural resource agencies should continue and expand their State and Federally sponsored monitoring of Texas lakes, bays, and estuaries in cooperation with lake owners, local industries, hunting and fishing organizations, and conservation groups.
4. TWDB should change the monitoring criteria to include (a) stream gaging at potential future impoundment and diversion sites identified in the State and regional water plans, (b) stream gages at large governmentally funded brush control sites, (c) stream gages in river and coastal basins needed for tracking instream flows and freshwater inflows to bays and estuaries, (d) all stream gages used in the WAM’s as permanent members of the “core” network, and (e) groundwater well gages that lie on flow paths between major pumping areas and major springs of interest.

Agricultural/Rural Water Issues

A. What are water-related threats to agriculture and what is the appropriate State policy to help ensure viability/sustainability/competitiveness of the industry and, at the least, address mitigation of these threats? How can impacts of the future shortages of water for agriculture be mitigated?

Recommendations

1. Regional Water Planning Groups should incorporate groundwater conservation district plans for water conservation programs to attempt to reduce overdraft or declining groundwater resources.
2. The Legislature should take actions that will facilitate funding of agricultural water conservation projects and make all or a part of those water savings available for nonagricultural purposes, while maintaining adequate supplies for agricultural use. Therefore, it should be State policy to provide mechanisms to facilitate or directly finance agricultural water conservation and transfer water savings through such mechanisms as the Texas Water Bank or other water markets. (Approved at stakeholders meeting with one dissenting opinion.)

3. The Legislature should fund a comprehensive agricultural water use database consisting of an inventory of agricultural lands and associated water demands. Additionally, the Legislature should require that the databases not contain site-specific landowner information.
 4. The Legislature should evaluate whether the Rule of Capture properly addresses property rights; historical, cultural, and environmental values; and current and future water use requirements. (Approved at stakeholders meeting by substantial majority.)
- B. What actions should be taken to address impacts of water supply changes on rural communities and their economy?

Recommendation

1. The Legislature should commit adequate funding to the Rural Water Assistance Fund.

- C. What is the State's role in improving water conservation in agriculture?

Recommendation

1. Given the limitations under Federal tax law that restricts the uses of the existing TWDB bond programs, the Legislature should take other actions to facilitate alternative and flexible funding mechanisms for water conservation that address both conveyance system and on-farm efficiencies.
2. The Legislature should enact policies to encourage reuse of water for irrigation.
3. The Legislature should increase educational and technical assistance and expand funding through low-interest loans or other monetary incentives to implement advanced conservation technologies and Best Management Practices.
4. The Legislature should provide more support for research on saline and drought-tolerant plants and increase support for research on and adoption of efficient systems for delivery and application of irrigation water. Consistent and recognized methods should be utilized to evaluate and determine the cost and benefits associated with water conservation efforts.

Groundwater Issues

Texas Water Code (TWC) §36.0015 states "Groundwater conservation districts as provided by this chapter are the State's preferred method of groundwater management." The following issues and recommendations are offered solely for the purpose of supporting and strengthening the State's established position with regards to the management and conservation of groundwater resources in Texas.

- A. Groundwater Management.

Discuss possible groundwater management goals, objectives, and strategies and the Groundwater Availability Modeling (GAM) results as illustrations of impacts of these goals, objectives, and strategies.

Recommendation

1. GCD's and RWPG's should work to identify possible goals and water management strategies for potential implementation, using the GAM's to evaluate and understand the impacts of these goals and strategies on the aquifer. GCD's and RWPG's over a common management area should strive to have compatible management goals. The TWDB should be available to assist in this effort, if requested. TWDB staff will provide any requested analysis on the basis of guidance from the GCD's and RWPG's. Results will be provided to the GCD's and RWPG's and also to the public over the Internet.
2. The Legislature should consider the addition of a management goal addressing the GCD's desired future condition for the aquifer for inclusion in the GCD's adopted groundwater management plan currently required in Texas Water Code §36.1071.

- B. Discuss criteria to determine the validity and use of available studies other than State supported GAM's for evaluating groundwater management goals and strategies.

Recommendation

1. GCD's and RWPG's should meet and work with TWDB staff to discuss and establish the validity of alternative techniques. The criteria will be: Do the proposed studies (or evidence) evaluate aquifer impacts and do they result in better estimates than estimates resulting from GAM's? Along this line, it is clearly recognized that other studies and other hydrologic evidence may be used to supplement, enhance, or refine results obtained from the GAM's.

- C. Describe impacts of operating water sources at sustainable levels.

Recommendation

1. The goal of groundwater management in Texas should be to move toward sustainability, but, because aquifers and the social and economic needs of the State vary from place to place, groundwater availability should be locally or regionally assessed, balancing all interests. This is clearly an example of where one size does not fit all.

- D. Conjunctive Use.

Discuss success stories in Texas. Identify opportunities for more effective and efficient water management in Texas.

Recommendation

1. The State should consider both statutory provisions and financial incentives related to the development of viable conjunctive use projects in order to use all water resources in a more efficient and effective manner. TWDB, TNRCC, TPWD, TDA, GCD's, and RWPG's should work aggressively together to identify opportunities for conjunctive use and encourage its implementation.

- E. Assessment of groundwater availability for minor aquifers.

Recommendation

1. The Legislature should appropriate sufficient funding for basic groundwater research necessary to generate and analyze basic data needed so that GAM's may be developed for all minor aquifers.
2. The Legislature should also consider encouraging GCD's to routinely collect basic groundwater data sufficient for groundwater availability modeling efforts and funding those efforts.

- F. Rulemaking Powers of GCD's over wells in certain counties.

Recommendation

1. Because safeguards for transporters were included in Senate Bill 2, negating the need for TWC § 36.121, and given the unintended consequences, the Legislature should consider the repeal of TWC § 36.121.

Water Marketing

Water marketing is a mechanism by which existing water supplies may be voluntarily redirected to match supplies with new or different demands. Previous Texas Water Plans have recommended water marketing as a possible tool to meet water demands. Recently, as some river basins have become fully appropriated and certain groundwater sources strained, there has been heightened interest in water markets and increased interest in large surface and groundwater transactions.

- A. What is the appropriate role of water marketing in the State's future?

Recommendation

1. Water marketing should play a significant role in future water supply planning and implementation. However, appropriate consideration must be given to potential third-party impacts of marketing. (Approved at stakeholder meeting with one dissenting opinion.)

B. What level of government should regulate water market transactions?

Recommendations

1. TNRCC should continue to be the agency regulating surface water rights.
2. Groundwater conservation districts should continue to be the State's preferred method of groundwater management.

C. What legal, institutional, and water management system changes are needed to provide for water marketing?

Recommendation

The Legislature should consider

Legal -

1. Requiring natural resource agencies, with stakeholders, to develop a report to look at benefits and impacts related to reuse for each river basin in the State and identify future information needs and policy options.
2. Clarifying the legal control of conserved water.
3. Determining how to identify and measure impacts from market transactions.
4. Clarifying protections for all interests, including the environment, to facilitate the efficient operation of the market.

Institutional -

5. Evaluating the need for a watermaster program in each river basin of the State.
6. Clarifying public welfare review terminology and criteria to be used for compensating areas of origin in surface water permitting.
7. Requiring that clear guidelines be developed concerning what information will be required during the TNRCC application process, including what information is required to get a declaration of administrative completeness.

Water Management -

8. Creating a publicly accessible database of water and water rights pricing information. All information will be posted solely on a voluntary basis.
9. Clarifying groundwater conservation districts' authority to prohibit the excessive drawdown and resulting permanent loss of groundwater supplies. (Approved at stakeholders meeting with one dissenting opinion.)

D. How would local water supplies be protected?

Recommendation

The Legislature should consider:

1. Forming additional Chapter 36 groundwater conservation districts or expanding existing districts to manage groundwater resources under clear management guidelines.

E. How would appropriate consideration of potential third-party impacts, such as those to agriculture and the environment, be ensured?

Recommendation

The Legislature should consider:

1. Developing procedures to better address third-party impacts, if any, from groundwater and surface water transactions. Processes may include the identification and quantification of mitigation measures.
2. Protecting rural communities' access to local water resources.

Conservation/Drought Management

This policy issue does not discuss agricultural water conservation as that is to be addressed in the Agricultural/Rural Issue.

A. What is the appropriate role of conservation and drought management in supplying Texas' water needs?

Recommendation

1. All water system operators should include conservation and drought management as integral parts of their water system operation. Recommendations for implementation are provided below.

B. Should minimum levels for water conservation and drought management be established? If so, how and by whom?

Recommendations

1. Minimum levels of water conservation should continue to be established by water suppliers at the local level. However, the TNRCC and TWDB should modify their rules to require that the water conservation and drought contingency plans include locally set quantified goals, such as in gallons per capita per day (GCPD). Goals set by specific entities should recognize their past efforts and local circumstances. (Approved at stakeholders meeting with four dissenting opinions.)
2. The Legislature should consider directing the TNRCC and TWDB to jointly identify quantified target goals for water conservation and drought contingency planning that may be used as guidance by water suppliers and other entities in preparing water conservation or drought contingency plans, and the Legislature should provide sufficient funding to assist entities in implementing plans that are consistent with quantified target goals.
3. The TNRCC and TWDB should jointly develop model water conservation programs for different types of water suppliers that would suggest best management practices for achieving the highest practicable levels of water conservation and efficiency achievable by a specific type of water supplier. (Approved at stakeholder meeting by substantial majority.)
4. The TNRCC and TWDB should jointly develop model drought contingency programs for different types of water suppliers that would suggest best management practices for achieving the highest practicable levels of water use reductions achievable during drought situations by a specific type of water supplier. (Approved at stakeholder meeting by substantial majority.)

C. How to facilitate achieving enhanced water conservation in all water use categories?

Recommendations

1. The Legislature should consider providing funds for loans to be made available for municipal conservation program activities, such as fixture replacement and other incentive programs.
2. The Legislature should also consider expanding tax exemptions for fixtures and equipment that are identified to lower water use and increase available supply.

D. How do we enhance water conservation and drought management public awareness and education?

Recommendation

1. A "Water Smart" or like program should be established as a permanent, year-round public awareness campaign. The outreach should be a coordinated marketing campaign utilizing private/public partnerships, all available media and include information on water supplies, water use, and water planning, as well as water conservation.

E. Leak detection.

Recommendation

1. The TWDB should review options for funding improvements of water system efficiencies, especially for reducing system losses. This subissue was approved at the stakeholder meeting with three dissenting opinions.

Water Quality

- A. Identification of emerging water quality issues, their impact on water supply, and suggestions for solutions. These include revisions to radionuclide and arsenic rules, protection of brackish groundwater supplies, and protection of surface water from intrusion of saline sources.

Recommendations

1. State regulatory and financial agencies should coordinate with their Federal counterparts to suggest regulatory and financial assistance programs to address the impacts associated with the implementation of new radionuclide and arsenic standards. When new standards are implemented, the Legislature should consider the cost of these standards on local water suppliers and assess the adequacy of current financial assistance to mitigate costs.
 2. State agencies are encouraged to use their existing authorities to protect brackish groundwater with the reasonable potential of becoming usable water supplies.
 3. The State should support efforts to protect water supply sources from saltwater intrusion.
 4. The State agencies should coordinate with their Federal counterparts to develop financial assistance and regulatory programs to address brine disposal from brackish groundwater.
- B. What policy changes need to be made to provide a high-quality drinking water supply at an affordable cost?

Recommendation

1. State regulatory and financial agencies should coordinate together and with their Federal counterparts to assess the cost of implementing new standards and how available financial programs can meet those needs.
- C. How can we effectively address point and nonpoint source water quality issues, including abandoned wells?

Recommendations

The Legislature should consider

1. Increasing financial assistance to soil and water conservation districts in Texas to develop watershed-based NPS management plans and to clarify that development of management plans is eligible for TWDB funding.
2. Authorizing natural resource agencies to assess the adequacy of current programs and financial capability to implement comprehensive watershed management.
3. Assisting GCD's in locating and plugging abandoned wells.
4. Enhancing funding for counties and other entities to address nonagricultural NPS and point source pollution.

Nontraditional Water Management Strategies

- A. What is the appropriate role of desalination in providing water supplies and how to provide flexibility and incentives for desalination, the increased use of brackish water, and research on improving desalination technology?

Recommendations

The Legislature should consider

1. Supporting research on various desalination issues, including identifying suitable sites for new desalination plants in consultation with RWPG's,
2. Encouraging local and regional entities to consider providing additional incentives for desalination plants, and
3. Encouraging agencies to evaluate their permitting processes associated with desalination, in a timely manner, to eliminate inappropriate requirements.

- B. What is the appropriate role of groundwater banking, recharge projects, and aquifer storage and recovery (ASR) in providing water supply and how to provide flexibility and incentives?

Recommendation

The Legislature should consider

1. Requiring groundwater conservation districts (GCD's) to consider including in their management plans a provision to promote and/or implement groundwater banking, recharge projects, and aquifer storage and recovery projects, where appropriate and cost-effective, to address areas with declining groundwater levels.
 2. Encouraging agencies to evaluate their permitting processes associated with groundwater banking, in a timely manner, to eliminate inappropriate requirements.
- C. What is the appropriate role of weather modification in providing water supply and how to provide flexibility and incentives?

Recommendation

1. The Legislature should consider providing funds to conduct research on the efficiency and impact of weather modification and on refining the techniques for cloud seeding/precipitation enhancement and to continue funding for current weather modification programs designed to enhance the availability of water.
- D. What is the appropriate role of brush control in providing water supply and how to provide flexibility and incentives?

Recommendation

1. The Legislature should consider continuing State support for brush control projects, as appropriate.
- E. What is the appropriate role of rainwater harvesting (RWH) in providing water supply, and how to provide flexibility and incentives?

Recommendations

1. In areas where such systems could reduce overdrafts on declining groundwater resources, GCD's and/or RWPG's should consider including RWH in their management plans.
2. The TNRCC should evaluate allowing the use of harvested rainwater as a raw water source so that it could be used to supplement the public drinking water supply.
3. Local and regional entities should consider providing additional incentives in their jurisdictions for those who wish to install RWH systems.

Planning and Implementation Issues

- A. How to improve implementation of projects by enhancing State and State-Federal regulatory agency coordination?

Recommendations

1. In the regional planning process, the TWDB should coordinate participation of appropriate State and Federal agencies, such as BOR, U.S. Army Corps of Engineers, FWS, USDA-NRCS, and EPA, to resolve implementation issues. Regional and local agencies should be involved in the planning process at the regional level.
2. TWDB should change the regional water plan guidance rules to include a mandatory coordination meeting of regulatory agencies to identify impediments and fatal flaws to project implementation, once a water management strategy is identified as a feasible solution for a water shortage.
3. The State natural resource agencies should meet biannually to prevent compartmentalization of agency stewardships and prevent conflict or duplication between agencies.

B. How to enhance public involvement in the planning and implementation process?***Recommendations***

1. TWDB, TNRCC, TDA, and TPWD should promote education of planning group members and offer the same information to the public on their important role within the regional planning process and implementation of water management strategies.
2. TWDB should provide clear guidance and communication to potential applicants and the public on the process of prioritizing projects for funding. This process should include education on regulatory issues affecting implementation.
3. RWPG's should work with TWDB to provide draft documents and more timely information as to the time and place of upcoming public meetings on the TWDB Web site to improve public participation.
4. TWDB will encourage public involvement by exploring ways to improve accessibility to the planning documents, such as developing an index of the contents of the regional water plans.

C. How to enhance nonstructural options?***Recommendation***

1. TWDB, TNRCC, TPWD, and TDA should provide a technical report on implementation feasibility of such options. This report should include information on legal and regulatory obstacles, regional appropriateness, environmental requirements and protections, and funding opportunities.

D. How to enhance macro-planning?***Recommendations***

1. TWDB and RWPG's should work together to conceptually address strategies beyond the planning horizon.
2. TWDB should consider developing a framework for regular meetings of regional water planning group chairs to discuss macro-planning and interregional cooperation issues in order to establish dialogue and education on issues involved in planning beyond regional boundaries and 50 years.

Data Collection and Information**A. Encourage compatibility of technical data and information across State agencies and other sources of data for the State's and all citizens' benefit.*****Recommendations***

1. The TWDB, TNRCC, TPWD, and other government entities should encourage compatibility of technical information by maintaining and increasing communication among these entities responsible for most water-related information in Texas. Such communication should focus on identifying opportunities and processes for enhancing efforts to integrate data and facilitate transfer of information between agencies (beyond the basic information already provided through the WIIC), and on evaluating possibilities to reduce redundancy in the information collected and maintained by the different agencies. The outcome of such increased communication and resulting initiatives should be reflected in each agency's internal operation work plans.
2. The TWDB, TNRCC, TPWD, and other government entities should encourage the inclusion of metadata (information about the data of a given data set) with all relevant sources of water-related data residing at different entities. Metadata facilitate the understanding of complicated data sets by providing historical, technical, and explanatory information regarding the associated data set, and they can therefore ease use and integration of different data sets.

3. State agencies and other government entities should identify and use common elements within water-related data sets residing in different entities to the highest extent possible, so that these databases can be more easily and directly related. At a basic level, at least a geographic (locational) reference or link should exist between many of these data sets because these data represent water-related characteristics associated with specific places. Therefore, geography can become a common link to some, if not many, of these to-date unrelated data sets. This item is further expanded in the discussion of the following issue.
4. The Water Information Integration and Dissemination (WIID) initiative illustrates the spirit of the above recommendations. A general recommendation is the formation of a task force, with dedicated resources, of the TWDB, TNRCC, and TPWD, with strong links to other State agencies and binational, Federal, State, regional, and local water data collection and management entities to develop an action plan to address these recommendations.

B. Enhance water management by encouraging use of StratMap data and Internet availability of data.

Recommendations

1. In response to these challenges, the TWDB, TNRCC, and TPWD should establish the Strategic Mapping (StratMap) digital base map as a common framework to be used to build, standardize, and display geographic locations of water-related data collected throughout the State to the highest extent possible and should invite other government entities to participate. The obvious benefit of this effort would be that data collected by different entities could then be seamlessly integrated on the basis of their location and on a common and approved set of base maps.
2. StratMap digital base map layers and other critical water-related data should be easily accessible via the Internet, utilizing the latest in technological advances. These technologies should continue to be used as a means of efficiently and centrally disseminating large amounts of water-related information from multiple sources. Furthermore, ongoing initiatives related to intra- and interagency data integration and dissemination should continue to be expanded to allow data from TWDB, TNRCC, and TPWD to be accessed simultaneously through a common Web-based interface. For example, in this fashion, critical information regarding streamflow discharge, water rights, and ecological information might eventually become available to the citizens of the State via the use of an Internet browser through a single information portal.
3. Water-related data holding entities should continue to expand other ongoing Web-based cooperative data networks, such as the Water Information Network through its Network Optimization Program, to bring other non-State agency governmental entities together to share important water-related information.

C. Enhance collection of information describing water resources, including real-time data collection, and funding needed for expansions of data programs and studies.

Recommendations

1. To solve these challenges, several efforts are already under way and should be provided continued support. Efforts to increase surface water and groundwater data collection in support of ongoing modeling initiatives (such as TWDB's GAM and TNRCC's WAM programs) should be continued. In addition, recommendations presented in individual regional water plans submitted to TWDB outlining specific requests for data collection and/or water resource studies in certain geographic areas of the state should be considered.
2. Efforts to enhance electronic data collection, transmittal, and storage methods regarding public- and private-sector, water-related activities should continue. Internet-based surveys are being used to collect data previously collected using only paper-based surveys, such as water use and ground-

water information. In addition, ongoing electronic real-time data-collecting methods used for surface water flow, groundwater levels, groundwater pumpage, and water quality should be greatly expanded to enhance the ability of the State and other governmental entities to make timely and efficient water management decisions, particularly regarding groundwater/surface water interactions. Real-time collection and storage of long-term hydrologic data improves drought and flood prediction efforts, water availability determinations, critical surface water and groundwater area evaluations, permit enforcement, and spill detection and response. Both real-time and Internet-based methods could substantially reduce the cost of some types of data collection, while facilitating more timely and flexible analysis and dissemination of critical water data.

3. The Legislature should consider allowing private landowners to keep their groundwater use data exempt from open records requests when submitted to applicable entities.

D. Issue: Enhance consistency of analytical techniques.

Recommendation

1. Increased efforts should be made by TWDB, TNRCC, TPWD, and other governmental entities toward ensuring that water analytical techniques are standardized among these entities and are made easily available to interested parties in the private and public sectors of the water management community, especially with respect to water modeling and related data analysis requirements. A specific and appropriate group may need to be identified and charged with developing strategies to address water data analysis consistency.

Conclusion

Issues of data collection and data dissemination are important to the State's efforts supporting the regional water planning process and should be considered for continued and increasing attention from the Legislature and the Texas public. Local efforts to collect data should be encouraged and coordinated with State efforts to maximize cost value and minimize duplication. Key data gaps should be identified and evaluated to insure that there are adequate water data in all areas of the State. Data that are high quality and easily available are critical to good water management decision making.

