



## Overview of Water Planning in Western States



February 2009

## Water Planning in Western States

This booklet was prepared by  
New Mexico Interstate Stream Commission staff:

Angela Schackel Bordegaray, *State Water Planner*  
Alison Williams, *Water Planner*

With assistance from  
Daniel B. Stephens & Associates, Inc.:

Joanne Hilton, P.G., *Senior Hydrologist*  
Dominique Cartron, J.D., *Water Resources Associate*  
Ellen Torgrimson, *Senior Technical Editor*

In passing the state water planning authorizing legislation (NMSA 72-14-3.1), the New Mexico legislature recognized the importance of water planning as a strategic management tool, requiring not only the development of the first New Mexico State Water Plan (SWP), but also that the New Mexico Office of the State Engineer and Interstate Stream Commission review the SWP every five years and update the plan as needed. Decisions regarding how to proceed with future New Mexico water planning efforts and SWP updates can benefit from understanding how other western states have dealt with similar water planning issues. Accordingly, this overview summarizes some basic information regarding water planning in western states.

---

### Objectives of Water Planning

Some of the common water-related issues faced by western states include growing population, periodic drought that may be exacerbated by climate change, increasing use of non-renewable groundwater supplies, concerns about endangered species and river ecosystem protection, over-appropriation, and competing uses. These water resource pressures have led to some type of water planning effort in all 14 western states (the states selected for this research) shown in Figure 1. The water planning efforts in these western states have various purposes, including:

- Fulfilling legislative mandates
- Ensuring future water supplies
- Educating decision makers and the public
- Providing detailed technical information and tools for water resources decision making
- Providing strategic plans for policy and project development

Some of the common components of water planning in each state are addressed below.

### Overall Approach to Planning

As shown on Figure 1, 10 western states have completed formal state water plans, with varying degrees of detail included. In addition, many of the western states, including the four without an overall statewide water plan (Arizona, Colorado, Oregon, and Washington), carry out water planning on a regional basis, allowing technical studies and communication among stakeholders to occur at a more meaningful, local level. Some of these states have divided the entire state into

regions and have conducted planning at a regional level (Colorado, Kansas, New Mexico, Oklahoma, Texas, Utah, and Wyoming). Other states have not completed regional plans for the entire state but have done some regional planning in key areas:

- In Arizona, efforts to protect the non-renewable groundwater resources have led to designation of five Active Management Areas in locations of intense groundwater use. Within these areas, individual management plans have been developed.
- Colorado has designated nine basin compact commissions and is completing a needs assessment for each hydrologic basin. The commissions include one for each of the eight river basins in the state and a separate commission for the Denver metropolitan area.
- The Oregon legislature passed and provided initial funding for the Oregon water supply planning and conservation initiative (OWSCI) in 2007. If fully funded, OWSCI will include an assessment of existing and long-term water supply needs, an inventory of potential storage sites, analysis of conservation opportunities, and estimates of basin yield.
- In Washington State, Seattle and the surrounding area have initiated a voluntary regional water supply planning process. The purpose of this planning is for agencies and water suppliers to share technical data, discuss key issues, and study management approaches to meet the combined needs of people and fish. Similar local watershed efforts are underway in other parts of the state. State agencies oversee and support some of the local planning efforts, but there is no comprehensive state water planning program in Washington.
- Idaho has completed plans for 11 river basins covering about 30% of the state.
- Montana has identified water management and policy issues on a regional basis.
- In Nevada, the entire state was not broken into regions, but local and regional planning have been done independently by major suppliers (such as the Southern Nevada Water Authority) in key urban areas in which growth has exceeded projections.



Figure 1. Water planning efforts in western states

## Planning Programs and Activities

The planning process used by each state also varies widely.

- Some states have a well-defined ongoing program involving periodic updates of the state and regional plans (Texas, California, New Mexico) and commitment of staff resources for ongoing planning efforts (Colorado, Wyoming, Utah), while other states made an initial planning effort but have not defined an ongoing process.
- Some states merely developed a plan, with no specific approach for implementation (Montana, Nevada, Utah), while other states have an implementation approach for portions of the plan (e.g., Idaho drought management). States such as Texas have fully linked the regional planning process to legislative funding for water projects.
- Most states included some multi-agency (mostly state government agencies) involvement during their planning process, but whether that involvement is ongoing varies. The development of the 2005 California Water Plan included extensive oversight and multi-agency involvement.
- Some states, such as California and Texas, have linked specific technical programs, including data management and modeling, to their planning process, while other states conduct data collection separately from planning.

## Public Participation

All of the western states incorporate public and stakeholder input in their water planning programs to some degree. Public involvement programs allow state agencies, public and private water providers, irrigators, environmental interests, and other stakeholders to identify, discuss, and resolve common concerns, conflicts, and solutions to water issues.

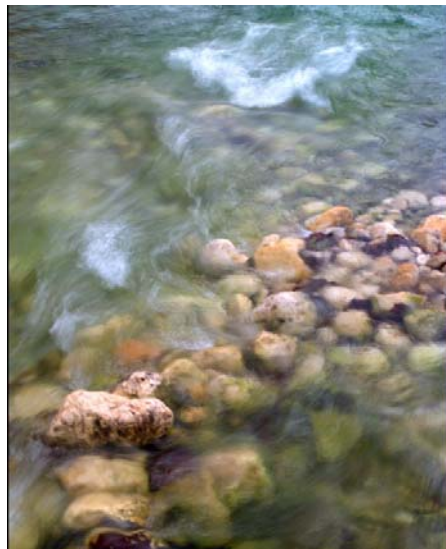
Some of the approaches to public involvement are as follows:

- In Wyoming, where planning was done for seven river basins, a local advisory committee was set up for each basin, and a mailed survey was used to solicit public input on issues of importance. Oklahoma, New Mexico, and Utah also used local advisory committees to direct water planning efforts in each of the planning regions. Kansas has set up committees with 11 members representing various water use interests within each of the 12 river basins.
- The Texas Water Development Board developed formal rules for regional and state water plans, including the composition of planning groups, at the onset of their planning process. The groups were required to include, but were not limited to, interests from the public, counties, municipalities, industries, agriculture, environment, small businesses, electric-generating utilities, river authorities, water districts, and water utilities.

- At the state level, New Mexico, Nevada, Utah, and California included extensive interagency and public involvement as part of the state water planning process. California's state water planning effort incorporated a large public advisory team including members from local, state, and federal agencies, environmental groups, tribes, and others. The public involvement facilitation team included 21 facilitators. In New Mexico, numerous public and tribal meetings were held to gather input for the state water plan.
- Colorado has developed a unique approach to public involvement in water planning. Legislation passed in 2005 set up a framework that provides a permanent forum for broad-based water discussions. The Water for the 21st Century Act created nine basin roundtables and an interbasin compact committee that guides discussions and voluntary negotiations between basins regarding interbasin conflicts.

### Tribal Role in Western State Water Plans

Many western states have significant Native American populations, particularly New Mexico, Arizona, and Oklahoma, in which Native Americans constitute 9.5%, 7.8%, and 4.7% of the total population, respectively. In California, while their percentage of the total population is lower, there are more than 400,000 tribal members in the state. The majority of western states do not have a formal process for ensuring tribal participation in state water planning, and in states with smaller populations or a small water planning budget, no mention of tribal concerns is made in the state water plan.



Source: *Water for Texas 2007, Vol. II August 2006.*  
<<http://www.twdb.state.tx.us/wrpi/swp/draft.htm>>

Instances where states have carved out a special role for tribes in the statewide water planning process include the following:

- In 2004 the California legislature created a tribal consultation process that targets local land use decision making. The purpose of the legislation is to protect culturally sensitive places through local land use planning. Cities and counties must contact and consult with Native American tribes before adopting or amending a general plan (similar to a comprehensive plan in New Mexico). The state has conducted extensive outreach to encourage tribal participation, and the Native

American Heritage Commission is a member of the steering committee to update the state water plan.

- While the State of Oklahoma has no formal process for involving tribes in the current water plan update process, the public outreach effort is open to all members of the public, including tribes. The state is also working on developing a compact with two tribes, the Choctaw and Chickasaw nations, to protect Kiamichi River basin resources and ensure that any exports out of the basin are reviewed by the state and the two nations.
- The State of Arizona does not have a formal tribal consultation requirement but has worked successfully with many tribes on local rural watershed planning efforts. The recently developed State Water Atlas, which compiles extensive data about Arizona water resources, includes information shared with the state by several different tribes. Tribes also participate by submitting data to the state on drought status in Indian Country. In developing the third management plan for the five Active Management Areas, however, tribal participation was solicited with little response.
- The New Mexico SWP sets out a policy for formal consultation between state and tribal agencies, and New Mexico regional water plans invited tribal participation. The New Mexico Office of the State Engineer has a full-time tribal liaison to work on water issues and has created a quarterly State Tribal Water Institute to provide a forum to address water planning and related issues.

### Quantitative Water Supply and Demand Assessments and Water Budgets

A common aspect of water planning in the western states is some type of quantitative assessment of both water supplies and current and projected demands for water. The level of detail and approach on these topics, as well as the funding levels allocated for the various assessment programs, varies considerably among the states. Some states (e.g., Idaho, Montana, and Nevada) placed less emphasis on quantifying supply and demand, and instead focused their programs on defining more general policy statements.

Virtually all of the states have provided some inventory of current water use along with projections of future use. On the supply side, the level of technical detail varied considerably. Many of the states that conducted more detailed technical assessments did them on a regional basis, rather than trying to quantify the balance between supply and demands for the entire state.

The quantitative assessments of supply and demand are often used to develop water budgets. In the water planning context, a water budget is similar to an accounting budget, where there is an inventory of all of the inflow terms (i.e., supply, such as surface water flow, recharge, etc.) and all of the outflow terms (i.e., demand, including natural depletions [e.g., evaporation] and human uses [e.g., agriculture and municipal supplies]). In some cases, full budgets that account for all

inflows and outflows were not developed, but a more general assessment of the supply-demand balance was completed.

Utah was the only state that completed a water budget for the entire state. Utah also, along with California, Kansas, New Mexico, Oklahoma, Texas, and Wyoming, conducted assessments of the water supply-demand balance on a regional level.

A comparison of the available supply with the current or projected demand can consider supply in two ways: (1) the supply that is physically available and (2) the supply that is legally available (i.e., its use is not restricted by legal or institutional constraints). States have integrated legal and institutional constraints into their water supply analyses to varying degrees. Some states, such as Oklahoma, have provided a comprehensive inventory of water rights and legally available supplies, while other states have not considered legal or institutional constraints. States such as New Mexico and Wyoming have identified key institutional constraints, such as interstate compacts, as part of their planning process.

Examples of the approach taken by selected states to assess the supply-demand balance include the following:

- Utah based its statewide water budget on the mean streamflows from each of the major surface water basins in the state and added to that the amount of water that is pumped from groundwater each year. Utah uses primarily surface water, making it easier to characterize the supply as an annual amount (surface water renews each year, whereas groundwater does not).
- In Oklahoma, current and future water use projections were balanced against an inventory of water yields and water rights to identify a net surplus or deficit for each region that considers both hydrologic and legal constraints in identifying the available water supply.
- In Wyoming, detailed surface water models (essentially water budgets) were prepared for each of the five surface water basins in the state. The models illustrate surface water supplies based on historical gauged records and include an accounting of all diversions of water.
- Oregon has identified the need for basinwide yield estimates as part of the OWSCI, but these analyses are not yet funded.
- Nevada developed projections of future use and discussed them in a broad sense in relation to supply, but did not attempt to develop quantitative water budgets by state or region.
- Texas has completed very detailed supply and demand assessments in each of its planning regions and has actively coordinated the technical efforts, resulting in consistencies of methodologies among the regions.
- As part of the SWP, New Mexico completed supply-demand assessments for major river basins, which do not necessarily coincide with the planning regions.

In addition, each planning region has developed some sort of assessment, but there are some variations in the methodologies used by the regions.

Other states, including Idaho and Montana, have not attempted to develop any type of quantitative water supply-demand balance assessment.

### Water Policy

In many western states, water plans are instruments for defining water policy. For example, the 2003 New Mexico SWP defined 14 key strategies that form the core of the state's water policies. The vast majority of the planning efforts recognized the importance of water use efficiency, water management initiatives (such as data collection and management and agency coordination), and water quality protection and management. In addition, virtually all of the western states recognize the value of conservation as a cost-efficient and feasible method to help meet future water needs. While Utah has set a specific goal for water conservation (25% reduction in use by 2050), most of the states have included conservation as a more general policy.

Other policies defined in many of the state water plans include:

- Instream flow
- Conjunctive management of surface water and groundwater
- Riparian habitat and stream channel protection
- Improved data gathering and/or database access
- Water storage/drought management
- Water quality protection

Most of the policies are incorporated in a general sense rather than setting up any enforceable criteria.

One exception is the Arizona Active Management Areas, for which statutory management criteria have been established. For example, in the Tucson Active Management Area, a safe yield by 2025 has been mandated (which will protect groundwater but not connected surface water). In some cases policies have been presented at a more detailed level, such as the Idaho drought management plan, which was prepared as a separate document and presented organizational and drought response information.



Source: California Water Plan Update 2005, Vol. 1, Sect. 3  
<<http://www.waterplan.water.ca.gov/docs/cwpu2005/vol1/v1ch03.pdf>>

## Water Plan Implementation

Western states vary in terms of whether they provide ongoing implementation programs once plans are complete and whether they use water planning to define and prioritize specific water projects. In Texas, specific projects are defined, but other states, such as Idaho, Montana, and Nevada, focus on much more general policy issues in their planning processes. In New Mexico, regional water plans identify priority strategies or alternatives, but typically do not detail project-specific plans. While the New Mexico SWP does not define specific construction-type projects, it does include information that can be used by decision makers such as the Water Trust Board as a guide in carrying forward projects.

In Texas, funding for water projects is tied to the regional water planning process. In most of the other western states, however, funding for water projects is not linked to water planning.

## Costs and Funding for Water Planning

Federal funding for the U.S. Geological Survey and other federal agencies has supported collection of basic data and characterization of water resources to provide information that has been used in water planning efforts. Aside from the recently passed U.S Senate bill that authorized the appropriation of funding to New Mexico for further characterization of water resources, funding for western water planning has largely been supplied by state legislatures.

Funding levels are extremely variable and are reflected in the widely varied water planning efforts in the western states. In some states funding is difficult to track because it comes from state agency budgets and is not specifically separated from other agency activities. Representative expenditures that reflect the wide range of costs are:

- About \$680,000 to develop the 2003 New Mexico SWP
- \$3.7 million in Wyoming, to develop the seven river basin plans (a one-time expense for the seven plans, although the state employs five planning staff and devotes a \$300,000 annual budget to ongoing planning efforts)
- \$36 million spent in Texas since 2002

Colorado is spending \$1 million annually for its basinwide needs assessments to support planning efforts of the basin commissions.

Kansas created a State Water Plan Fund in 1989 for the purpose of implementing the State Water Plan. Revenue is subject to annual appropriations and is generated by water protection fees (3 cents per 1,000 gallons) from public supplies, industrial, and stock watering, as well as from fees imposed on pesticides and fertilizers, fines for pollution violations, and sand royalties. Also, by statute, \$6 million annually is to be transferred from the General Fund to the State Water Plan Fund.

## Conclusion

Western states all recognize the importance of protecting their water resources and preparing to meet future needs of their citizens. The planning efforts have many similarities, including:

- Extensive stakeholder and public involvement in the planning process
- A focusing of the more detailed evaluation of supply and demand on a regional, rather than a statewide, level (although the level of detail has varied widely)
- Inclusion of some type of policy recommendations as part of their plans

Recent initiatives and expenditures on planning in Texas, California, Oregon, and Colorado emphasize the increasing importance that western state legislatures are placing on planning to address growing pressures on limited water resources.



Source: *Water for Texas 2007, Vol. II*  
<<http://www.twdb.state.tx.us/wrpi/swp/draft.htm>>