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AN OVERVIEW OF WATER RESOURCES PLANNING

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A BRIEF HISTORY

The 1960s

The Federal Water Resources Planning Act of 1968 signaled the formal entry of the federal government into water resources planning. This act established the U.S. Water Resources Council along with the Title II River Basin Commission. Responsibilities of the Water Resources Council included developing an assessment of the nation's water resources, and implementing a state grant program for water resources planning. The Water Resources Council also developed *The Principles and Standards for Planning Federal Water Resources Projects*, which for many years provided federal agencies with guidelines for water resources planning purposes.

The U.S. Water Resources Council and the Title II River Basin Commission were probably somewhat outdated even at the time of the 1968 act. In many ways, they were more directed to the water resources problems and the planning goals of the 1940s, as exemplified by the Pick-Sloan Act, than they were to the planning problems of the 1960s and 1970s. The

attempts at river basin planning using large maps filled with triangles indicating proposed reservoir sites were not appropriate for the water resources development and management problems of the 1960s and 1970s.

Another development during the 1960s was the marriage of the computer to water resources planning. Computers enabled planners to develop large simulation models and linear programming models designed to maximize regional economic development. In almost all the modelling work, economics was the objective and driving force.

During the 1960s we saw the first indications of an emergent environmental awareness, which later would significantly impact water resources planning. For example, the Marble and Bridge Canyon Dam proposals for the Grand Canyon were defeated eventually because of environmental concerns.

The 1970s

The 1970s saw declining leadership by federal agencies, especially in the western U.S. where the Bureau of Reclamation was no longer automatically the dominant force in water resources planning and devel-

opment. However, in contrast, the efforts of the Carter administration and their water policy review were to sow the seeds for eventual fundamental changes in cost sharing and other important water policy planning matters.

The 1970s saw increasing environmental concern and the passage of important legislation, such as the National Environmental Policy Act and the Clean Water Act. New agencies were developed such as the U.S. Environmental Protection Agency, which would also come to have important affects on water resources planning.

The 1980s

Much of the Carter water policy with respect to water project planning was implemented by the Reagan administration, especially increased cost sharing by local governments and states for federal water projects. The Endangered Species Act and the Clean Water Act came into prominence in the 1980s as major players in water resources planning.

The 1980s saw the total demise of the Water Resources Council and the River Basin Commissions. *The Principles and Standards* which were published rules by the Carter administration became guidelines under the Reagan administration.

State and local governments were forced into accepting a significantly increased planning role and shouldering more development responsibilities in the 1980s as a result of the declining importance of the federal agencies and declining federal funds for projects.

In some respects, the prior appropriation system became a more important water resources planning tool in the 1980s with the demise of federal projects. Additionally, irrigated agriculture became less of a potent political force in the western United States in promoting water projects and policies.

The 1990s

The focus has changed in the 1990s from project construction to transfers of water from lower value uses to higher value uses. President Bush's signing of the Omnibus Bill in October 1992 paved the way for increased transfers of water from federal projects in California and others in the west. Transfers of water from agriculture to municipal industrial purposes have been occurring for a number of years; however, in the 1990s these transfers are becoming a major potential source of new water supply for municipalities and industries.

The Endangered Species Act is proving to be a major driving force for water resources planning in several western states. No longer is water resources planning devoted primarily to maximizing national or regional economic development; in the 1990s it is often devoted to determining how adequate water supplies can be obtained for restoration of endangered fish species while still preserving sufficient water supply for future development.

For example, a major effort is underway to restore endangered fish species to the Colorado River basin in Colorado including the White, Green, Yampa, main stem Colorado, and Gunnison rivers. Important components of this restoration implementation program include:

- Determine and accept flow needs for habitat essential to recovery for the Yampa, Colorado River main stem, Gunnison, White and Green rivers.
- Provide for 2,000 cfs minimum flow below the confluence of the Colorado and Gunnison rivers.
- Evaluate options for allocating Colorado Compact entitlements among the five sub-basins.
- Provide for 35,000 acre-feet of salvage water from the Grand Valley Irrigation Project.

Needless to say, these efforts constitute serious water resources planning and will affect water resources development in the state of Colorado. EPA's refusal to approve permits under Sections 401 and 404 of this act, thereby canceling construction of a significant water supply source for the Front Range area in Colorado, provides a good example.

Interstate compacts also will provide an important stimulus in western water resources planning in the 1990s and into the next century as evidenced by recent litigation on the Pecos River and current litigation before the U.S. Supreme Court on the Arkansas River in Colorado and the Platte River in Nebraska and Wyoming.

Instream flows for environmental and recreational purposes will be an increasingly important issue facing water planners. The separation of water quality and water quantity planning has long been a problem. Another continuing concern is water quality impairment by users authorized under state law, for example, depletion degradation and physical alteration. Water resources planning in the 1990s will pay attention to reducing the separation of water quality and quantity issues.

THE FUTURE OF WATER RESOURCES PLANNING

Will water resources planners have to sit idly by and accept the dictates of the Endangered Species Act, the Clean Water Act, and diminished funding in the 1990s? Or, can water resources planners be more proactive to insure that everything will not necessarily be litigated? Future water resources planning should focus on the following several issues.

Basin-of-Origin Issues

Basin-of-origin issues will become pivotal in water resources planning. We can either provide leadership in resolving these issues or have solutions forced upon us by state legislatures. Possible actions include developing guidelines and criteria for evaluating water transfer proposals and addressing potential third party effects. The public interest/public welfare language which exists in state statutes, such as in New Mexico, but not in Colorado, can provide a basis for insuring more adequate evaluation and response to all those affected by water transfers. Water planners, engineers, and attorneys should identify possible water transfers that meet water management objectives and do not provide injury to the basin-of-origin.

Instream Flows

Water planners also can be more proactive in areas such as instream flows. States can determine whether water rights acquisition for instream flow purposes should be limited to the state government or whether other governmental entities and/or private interests should be allowed to acquire instream flow water rights on the same basis that water rights are acquired for other purposes.

Water Conservation and Salvage

Water conservation and salvage can be promoted by state water planning interests. Salvage occurs when a new source of water is obtained due to improved water use efficiency. There may not be additional large salvage projects such as the Imperial Valley Project in California, but smaller projects might be developed without injuring users of return flows.

Decision Support Systems

Decision support systems provide water resources planners an opportunity for assuming leadership for future planning. By assembling good quality data bases with verified data, state water resources planners will automatically take a leadership role. If state water

planners can assemble models or calculation procedures for manipulating this data, an even greater leadership role is possible for state water resources planners.

These examples provide only a few areas in which state water planners can be proactive.

CONCLUSIONS

The future of water resources planning in the United States is in facilitating water rights transfers, resolving conflicts between instream flow demands and water development, and solving basin-of-origin conflicts. State water officials and water planners have responsibility to promote these new concepts in water planning.