

Water Scarcity in the West and the Development of Water Projects

Water rights and allocation in the West are controversial topics, making the Colorado River System subject to a complex system of interstate legal compacts and court decrees. The Colorado River Basin is divided into two parts: the Upper Basin, which includes parts of Colorado, New Mexico, Wyoming, and Utah; and the Lower Basin, which includes parts of Arizona, Utah, Nevada, California, and New Mexico. The boundary separating the Upper and Lower Basins occurs on the Colorado River at Lees Ferry, Arizona, below the Glen Canyon Dam (See Figure 1). Here the average annual virgin waterflow (the flow which would exist in the absence of man's activity) was 13.8 million acre-feet per year from 1930 through 1974, although annual flows fluctuated substantially.

Water availability in the Colorado Basin is often complicated by geographic factors. Most of the region's large metropolitan centers are removed from the areas endowed with abundant water resources. In Colorado for instance, the Colorado River System contains over two-thirds of the state's readily available water, yet only about 20 percent of the state's population resides near the source. Colorado's major metropolitan centers (Denver-Boulder and Colorado Springs) are located along the Front Range on the eastern side of the Continental Divide where water is less plentiful. Another example of geographical disparity occurs in Arizona. Tucson has relied heavily on its groundwater supply; some areas of the city have subsided more than seven feet. Local drawdown effects of this kind, combined with a regional lowering of the water table, tend to aggravate the impact of periodic droughts common to the West.

Water resource projects have significant economic impacts in the West. The Four Corners area typifies this. Reservoir development has helped ensure water supplies during dry years, offset seasonal fluctuations of water flow, and provide benefits such as increased agricultural activity from irrigation and new recreational opportunities. An example of this type of reservoir development is the Navajo Dam which, when completed, will provide irrigation for over

110,000 acres of previously dry land through the Navajo Indian Irrigation Project. Another project, the McPhee Reservoir on the Dolores River in Montezuma County, Colorado, was recently completed. It will provide water for irrigation, municipal, and industrial uses. A third reservoir planned in the Four Corners area is the Animas-La Plata Project. Many believe that this project will resolve legal conflicts between the Indian and non-Indian water users in southwestern Colorado.

Division of Water Rights

The history of division of water rights in the Colorado River System is very complex and is a product of many competing demands. Water rights for the Colorado River were first divided in 1922 by the Colorado River Compact (between the Upper and Lower Basin States) and the Upper Colorado River Compact (between Colorado, New Mexico, Wyoming, and Utah). The Colorado River Compact was formed because the Upper Basin States were concerned about the alarming rate at which the Lower Basin States were developing. The water of the Colorado River, with an average flow of 1.5 million acre-feet per year, was divided equally between the Upper and Lower Basin States. The Upper Basin States took their portion and further apportioned it, among themselves: 51.75% to Colorado, 11.25% to New Mexico, 23% to Utah, and 14% to Wyoming.

Demands for Colorado River water did not come from just within the country. Mexico also wanted its share. In 1944-45 the Mexican Water Treaty was signed. It guarantees delivery of at least 1.5 million acre-feet of water per year (AFY) to Mexico except in times of severe drought.

In 1956, the United States Congress passed the Colorado River Storage Project Act. This act focused on Glen Canyon, and the Green, Gunnison, and San Juan rivers. Section 7 of the Act authorized hydroelectric plants and transmission lines to be constructed at these sites. The electricity thus generated would then

be sold to assist in repayment of the project costs. The revenues from the hydroelectric plants would eventually be used for irrigation development in the Upper Basin States. Several of the projects authorized under this act would also help to resolve Indian water rights disputes.

The final significant legal decision which impacts Colorado River water rights was the Supreme Court decree, *Arizona vs. California* (376 U.S. 340), 1964, which distributes Lower Basin water as follows: 4.4 million AFY to California, 2.8 million AFY to Arizona, and 0.3 million AFY to Nevada. The decree includes the stipulation that one million AFY of the water allocated to California and Arizona be diverted to the five Indian tribes living along the Lower Colorado River. The Supreme Court decree, however, does not consider the natural year-to-year flow variations since it allocates absolute amounts of water to each state, and thus the decree instigates legal debate whenever the river drops below 7.5 million AFY.

Indian Water Rights

In 1908, in the case of *Winters vs. the United States*, the Supreme Court affirmed the water rights of the Indians. The Court recognized that the purpose behind the formation of the reservations was to help the Indians establish a new way of life including agricultural development. This implied that sufficient water should be available for use by the Indians.

Still, some conflict exists concerning Indian water rights. The Ute Indians have been involved in a water-related suit since 1868. Their main opposition is to the western states which govern water under the philosophy "first come, first served." The first people to divert water and put it to use have a senior right to those who come later. Since the small Indian tribes did not use their water, many non-Indians have felt justified in appropriating it. The Supreme Court's ruling in the *Winters* case, that the Tribes have rights which are not lost by lack of use, has often been ignored. These rights, however, have been affirmed in the 1963 decision of *Arizona versus California*.

The history of the Southern Ute Indian Tribe illustrates how a dispute over water rights in this area may arise. In 1868 the reservations were established, but by 1873 the U.S. government had "negotiated" the Southern Ute Indian Tribe out of 15 million acres of land. The U.S. Government announced plans to open the Ute Reservations for homesteading in 1895. From 1900 through 1930, homesteading created a checkerboard pattern of Indian land alternating with white homesteads. This pattern produced jurisdictional problems along with water administration and energy development difficulties.

Some Indians still feel that "Indian water is presently being allocated to water users who have the economic and political clout to prevent the allocation of water to Indian use once the Indian water rights are quantified" (Trudell, et al., 1982). The tribal governments feel that they should have the ability to access off-reservation water sources. They also see the need for a comprehensive water policy established by the United States based on scientific studies instead of politics.

Conflicting viewpoints concerning water rights have resulted in a great deal of litigation. In 1982, there were 48 water-related suits in process involving ten western states. However, experience has shown the Indians that it may take as long as 40 to 50 years to reach a legal decision. As a result, many Indians have turned to negotiation as a means of resolving conflicts of interest. Usually these consist of tribal-state negotiations in which the goals and desires set by each part are negotiated into a final agreement. This agreement is ratified by the tribal governments, the state, and, if necessary, Congress.

The Animas-La Plata Project

The Animas-La Plata Project (Figure 2) is sponsored by the Bureau of Reclamation and was authorized by Congress in 1968 as part of the Colorado River Storage Project. This project is an example of the negotiation process between the Indian tribes and the State of Colorado. The project is located in the Upper Colorado River

Basin in La Plata and Montezuma counties. It is designed as a multi-purpose water resource development providing municipal, industrial, and irrigation water for southwestern Colorado and northwestern New Mexico. For fiscal year 1988, approximately \$1.9 million has been appropriated by Congress for planning and start-up. It is estimated that the completed project, as originally planned, will cost \$547.3 million. The expanded total benefit-cost is projected to be 2.82:1. The project is expected to take 10 to 12 years to build, bringing an estimated 1,150 jobs to the area during the peak of work. U.S. Bureau of Reclamation studies say annual gross agricultural production would be increased by \$25 million as a result of constructing the Animas-La Plata Project.

The project, as originally proposed, would consist of two storage reservoirs with a combined capacity of over 350,000 acre-feet of water and over 200 miles of canals, tunnels, etc. required to deliver the water to consumers. Since originally conceived, the project has been subdivided into smaller construction units. As the project is now proposed, under Phase 1, Ridges Basin Reservoir, an offstream project reservoir located southwest of Durango, will store water pumped from the Animas River. Under Phase 2, water will be diverted from the La Plata River to the Dry Side Canal by the La Plata Diversion Dam during spring runoff. Southern Ute Reservoir, near the Colorado-New Mexico state line will receive water from the Southern Ute Diversion Dam and Inlet Canal. Under the Animas-La Plata Project, water would be supplied in Colorado to the city of Durango and the rural La Plata area and to the cities of Farmington, Aztec, Bloomfield and several smaller communities in New Mexico. Area Indian tribes will also be major consumers. The Southern Ute, Ute Mountain, and Navajo tribes will all receive water for agriculture and coal resource development. When completed, the project could provide irrigation for nearly 59,000 acres of land in Colorado and 8,500 acres in New Mexico.

The project will be financed under a cost sharing agreement between the project beneficiaries and

the Federal government. The terms of the cost sharing agreement have the following terms:

- \$201 million (65 percent) from revenues generated by the Colorado River Storage Project. These revenues come primarily from the sale of electricity generated by the Glen Canyon Dam in Arizona, the Flaming Gorge Dam in Utah and the Curicanti Unit Dams in Colorado.
- \$41.95 million (13 percent) from local Indian tribes.
- \$21.8 million (10 percent) from irrigators and other sources.
- \$12.4 million (4 percent) from local property taxes.
- \$2.978 million (1 percent) from municipal and industrial non- Indian users.
- \$30.86 million would be federal funds that do not require reimbursement.

The Dolores Project

The Dolores Project (Figure 3) was also authorized under the Congressional act which created the Colorado Storage Project. This project, located in the Dolores and San Juan River Basins in southwestern Colorado, will develop water from the Dolores River for irrigation, municipal and industrial use, recreation, fish and wildlife, and production of hydroelectric power. The area of service includes Dove Creek, the central Montezuma Valley, and the portions of the Ute Mountain Indian Reservation north of Towaoc.

Primary storage of Dolores River water flows for all project purposes is provided by McPhee Reservoir, formed by McPhee Dam and Great Cut Dike. Dawson Draw Reservoir, located west of McPhee Reservoir, will be constructed specifically for fish and wildlife enhancement. A total of 61,728 acres of full service land will come under irrigation as a result of the project. Power plants will be located on McPhee Dam and Towaoc Canal to generate an annual average of 37,488,000 kilowatt-hours of electricity which will enter the Colorado River Storage Project power transmission system.

Benefits which accrue to this project are:

- Irrigation of 61,728 acres on which are grown such crops as alfalfa, pinto beans, wheat, pasture grass, barley, oats, and corn silage for livestock feed.
- A supply of municipal and industrial water of 8,700 acre-feet.
- The development of recreational opportunities and wildlife conservation.
- Flood control for downstream landowners.
- The construction of the Anasazi Heritage Center (see article elsewhere in this Field Guide). This facility is part of the mitigation effort required as a result of the Dolores Project.

References

"Animas La Plata Project--Colorado and New Mexico." May 1985. Bureau of Reclamation, Durango Projects Office.

"Animas-La Plata Project." 1987. Bureau of Reclamation, Durango Projects Office.

"An Assessment of Oil Shale Technologies." Washington, D.C.: Office of Technology Assessment.

"Dolores Project." 1987. Bureau of Reclamation, Cortez Projects Office.

"Dwindling Colorado River Trickles." January 17, 1984. Rocky Mountain News.

"House Nearing Passage of Animas-La Plata, Chances Good in Senate, Wallace Says." June 14, 1985. Cortez Sentinel

"House Votes \$1.35 Million to Animas-La Plata Project." June 7, 1985. Durango Herald.

"Indian Water Litigation: 48 Indian Water Suits in 10 Western States." July 23, 1982. The CERT Report

La Course, Richard. July 23, 1982. "Tribal-State Water Negotiations Produced 'Case of Nerves'." The CERT Report

McKelvie, Byron. May 13, 1985. "What Price No Project?" Cortez Sentinel..

"Reagan Signs Animas-La Plata bill." August 18, 1985. Durango Herald.

"Senate Breaks Deadlock on Animas-La Plata." June 26, 1985. Cortez Sentinel,

Salisbury, David F. "Indians Versus States: The Tribes Turn to Negotiations As Way to Correct Water Inequities." Editorial. Rocky Mountain News.

Trudell, Richard, and Joseph Myers. July 23, 1982. "Waters of Conflict: How Indian Water Rights Are Resolved May Determine Future of Western United States." The CERT Report.

Water in the West. 1981. American Institute of Professional Geologists.

Western Colorado Projects Review. March 8, 1984. Colorado Water Conservation Board and the Bureau of Reclamation.