



1999 Annual Report

Colorado Division of Water Resources

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Also known as the State Engineer's Office, the Division of Water Resources issues water well permits, administers water rights, monitors stream flow and water use, inspects dams for safety, maintains databases of Colorado water information, and represents Colorado in interstate water compact proceedings.

The Colorado Division of Water Resources strives to be

a leader in the water community of Colorado and the western United States. This is accomplished by focusing on the following areas: *people, water and stewardship*. *People*, because we recognize that the business of water involves our employees and the public. *Water*, because the administration, safety and use of the State of Colorado's water resources is something we are committed to and care deeply about. *Stewardship*, because

we understand and accept our obligation to the taxpayers and ourselves, in using and protecting the resources in the most effective manner possible.



A Message from the State Engineer...

The year 1999 was an extraordinary year of challenges as we addressed additional issues of significance while continuing to lead and manage the staff of DWR in accomplishing our mission. These issues included working on endangered species recovery related plans on the Rio Grande, the Platte River, and the Colorado River; responding to interstate compact litigation on the Arkansas and Republican River Compacts; and participating in numerous activities in the Rio Grande Basin dealing with the operation and ownership of Federal facilities. These issues required considerable time to properly protect Colorado's compact entitlements and uses of its water

resources. Literally hundreds of hours of overtime have been put in by each person working on these important activities. Unfortunately, we cannot compensate them in any way but to thank them for their dedication to the agency and to the water users of the state. I am constantly amazed at the work ethics of the staff of DWR and their dedication to our mission and the state's citizens. We continually develop new technology to assist us and to work more effectively. We have continued to image well permit files so that staff can access it electronically, and expect to complete exempt well files by July 1, 2000. We will move forward with imaging all large capacity well permit files, dam

safety documents, and other important documents. The Rio Grande Decision Support System is well underway and will assist us in the management of the water resources of the San Luis Valley. Computer based water rights administration tools have been developed to assist us and to inform the public of real-time water administration conditions. The transfer of our satellite-linked water resources data system was completed in December of 1999 to a new computer platform with revised programs that will allow us to better serve the public through the Internet. In conclusion, I believe we have the best staff of dedicated and professional persons of any water agency in the nation.

Rio Grande Compact Administration

The administration of the Rio Grande Compact in 1999 was an incredible challenge to the Division 3 staff. The Rio Grande mainstem saw an unprecedented change in forecasted index supply over the late spring and summer. The abnormal winter of 1998-99 was as warm and dry as most residents of the Valley had ever seen. The effects of La Nina worked to direct most storms around the southwestern part of the state, and by April 1 the snow pack was 50% of normal. Diversions were allowed early because it was thought there couldn't be enough of a change in the weather to make up for the dry conditions.

Conejos system diversions were allowed to begin on March 9 and the Rio Grande diversions started on March 14 after deliberations with all of the users on the river. Then, as if all the cumulative hopes, snowdances, and prayers came to-

gether at the same time, major snowstorm events the first week of April and the first week of May provided enough snow-water content to provide a near normal forecast by May 7. As if that weren't enough to deal with concerning the necessary changes to Compact administration, the monsoon rains started in June and the projected forecast supply started an unending upward spiral through October. The increase in the forecast index supply each month caused substantial increase in the curtailments and extraordinary coordination and communication with the users on both rivers.

Many late nights were spent planning and trying to forecast the ever increasing supplies and trying to decide what needed to be done to keep up with required deliveries. The results of this exemplary effort was that Colorado only over-delivered by 8,500 acre-feet on a total index of

1,228,000 acre-feet, a margin of less than 0.7 percent. This narrow margin could not have been achieved without the expertise of Steve Vandiver and his staff and without the real-time streamflow data provided by the satellite-linked water resources management system.

"There is no such thing as normal, average, consistent, uniform, predictable, stable, typical, regular or ordinary conditions in the field of hydrology. These adjectives are myths used to deal with the unknown."

— the Division III staff —

1999 Statistics...



- ◆ Reviewed and acted on 165 substitute water supply plans.
- ◆ 348 subdivision referrals were received and acted on.
- ◆ 10,532 well permits were issued.
- ◆ Designated Basins staff processed 1,156 small-capacity and 275 large-capacity well permits.
- ◆ 985 dam safety inspections occurred.
- ◆ Board of Examiners of Water Well Construction and Pump Installation Contractors licensed 336 contractors and conducted 22 oral examinations for new licenses.
- ◆ The Records Section served almost 3,000 walk-in customers, provided almost 10,000 copies of various water related documents, and added over 33,000 new file documents.

Engineering Support of the Litigation in Kansas v. Colorado

Considerable time continues to be invested in various activities related to the ongoing litigation as well as with improving the quality of the data required to operate the Hydrologic-Institutional (H-I) Model which is being used to measure Colorado's compliance with the Compact. One critical component was to update from 1985 the irrigated area within the Arkansas Valley and the area irrigated by wells. Division 2 staff worked with GIS specialists from the Denver IT Team to use satellite imagery mapping for 1998 to quantify acres irrigated and estimate crop types. Surveys of each active well owner indicated

how the irrigated area was supplied water from the well; i.e., method of application, and if the well was a sole source of supply or a supplemental supply. The results of this project indicate that the total area receiving a supplemental supply is less than previously utilized. This causes the H-I Model to compute less depletions to stateline flow by post-compact wells. Colorado will ask the Special Master to endorse this process for future compact compliance computations during the next trial segment in late 2000.

Colorado River Basin Coordinated Reservoir Operations

1999 marked the third year of coordinated reservoir operations under the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River. The objective of the program was to coordinate operations of and releases from various reservoirs to enhance habitat in the 15-mile reach of the Colorado River below the Grand Valley Irrigation Canal for the benefit of endangered fish species. A workgroup was formed of several governmental agencies, Division 5 staff, and water user groups in order to oversee the coordinated reservoir operations.

The workgroup held its first meeting in April to assess spring streamflow, weather, and snowpack conditions and to evaluate the potential for augmenting peak flows. At that time, the snowpack was too low to operate the program; however, by May, the snowpack had increased to 117% of normal in the Colorado Basin and conditions appeared to be favorable to enhance the peak flows. All reservoirs to be used to enhance the peak were expected to fill and operators of these reservoirs gave a preliminary approval to participate in the program.

The workgroup was able to correctly pinpoint the peak flows in the 15-mile reach and to enhance the peak which occurred in June at the Palisade gage with a daily average

flow of 11,900 cfs. It is estimated that the peak flow was enhanced by approximately 2000 cfs as a result of the program.

Maximum Coordinated Reservoir Contribution (average daily outflow)	
Reservoir	cfs
Green Mountain	1500
Ruedi	470
Wolford Mountain	492
Dillon	1450
Williams Fork	260
Granby	535
Willow Creek	470

Yampa River Basin Programmatic Biological Opinion

Beginning in August of 1999, meetings were held to discuss the development of a programmatic biological opinion under the Federal Endangered Species Act for the Yampa River Basin. Participants in the process included Division 6 staff, the federal government, local water conservancy and conservation districts, the Yampa River Basin Partnership, and other local interest groups.

The participants worked to develop a management plan for the Yampa River basin that identified future water needs in the basin, and the specific measures that would be taken by the Upper Colorado

River Endangered Fishes Recovery Program to provide ESA compliance for those depletions. The plan served to identify actions taken to support recovery of the species and at the same time allow for future depletion in the basin. The plan covered the Yampa River mainstem and also the Little Snake River in both Colorado and Wyoming. The four fish species that were covered by the plan are the Colorado pikeminnow, humpback chub, bonytail and razorback sucker.

It was identified that non-native fish are a major threat to the recovery of the endangered species. Reducing the numbers of

non-native fish in the river and keeping those populations down will be an extremely important part of the recovery of endangered and other native fishes in the Yampa Basin.

Substantial progress has been made since the development of the Yampa River Basin Management Plan. An MOU will be developed to be the basis for a programmatic biological opinion, which will provide the people of the Yampa Valley with certainty that their existing and future depletions will be in full compliance with the regulatory requirements of the Endangered Species Act.



Interstate Compact Highlights

- Activities relevant to the **Republican River Compact** litigation continue to gain momentum while the State Engineer's Office is waiting for the U.S. Supreme Court decision on whether ground water was allocated within the compact.
- Representatives from Colorado and New Mexico met in Farmington, New Mexico, in April to address issues relevant to the **La Plata River Compact**. A key agreement that resulted

from the meeting was to include the Keller Ditch as part of the upper index amount.

- The damages segment of the **Kansas v. Colorado** concluded in January and the State Engineer's Office expects a report from the Special Master in July 2000.
- A draft Water Operation Manual, designed to effectively and equitably distribute water in accordance with the **Costilla Creek Compact**, was developed.

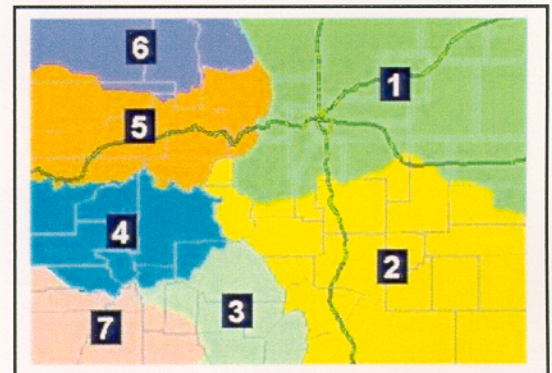
Platte River Cooperative Agreement Efforts Continue

Staff have been deeply involved in various activities associated with this program to provide water and habitat for the three endangered bird species along the Platte River in Central Nebraska. Dick Stenzel, Division Engineer, has provided considerable time and expertise to the Water Management Committee, which has been responsible for overseeing a basinwide study by Boyle Engineering whose charge was to identify water supply and conservation alternatives that could provide 60,000 to 80,000 acre-feet of water in addition to the 70,000

acre-feet originally offered by the three states. Hal Simpson and Dick Stenzel also supported the Water Action Plan Committee developing an action plan to utilize specific alternatives from the Boyle Report in order to provide the additional water. Colorado has offered to expand the Tamarack Project and construct other recharge projects that would provide a total of 27,000 acre-feet of recharge accretions during times of shortage on the Platte River in Central Nebraska.

Other Accomplishments...

- First year of development for the Rio Grande Decision Support System (RGDSS); the data collection phases were completed while the well construction, testing and modeling tasks range from 25-45% complete.
- CRDSS development was nearly completed.
- Imaging System Day Forward project began.
- IT staff developed and deployed the Well Tools software.
- Geotechnical Services Branch was a major contributor to the successful completion of the 2,100-foot deep Denver Basin core hole located on the Elbert County Fairgrounds in Kiowa.
- Eliminated the ground water well permitting backlog, and the average well permit application is processed in less than two weeks.
- Information Technology (IT) Board of Directors was established in response to the ever-growing demand for computers, networks, decision support systems, and applications development.
- The efforts to install Parshall Measuring Flumes on all ditches in the Upper Gunnison Basin was successful in getting many flumes and headgates in place. These flumes greatly assisted the Water Commissioners in obtaining accurate flow readings in the many ditches that are recorded each year.
- Rejuvenated the Satellite Monitoring System, WaterTalk and the Stream Flow web pages.
- Completed Hydrobase, the relational database management system that supports all of the agency's applications.
- The SEO participated as a formal party or litigant in only 4.4 percent of the 1,238 Water Court cases filed.



Water Division Boundaries

- Div 1 - South Platte River Basin
- Div 2 - Arkansas River Basin
- Div 3 - Rio Grande River Basin
- Div 4 - Gunnison River Basin
- Div 5 - Colorado River Basin
- Div 6 - Yampa/White River Basins
- Div 7 - San Juan/Dolores River Basins

Employee Recognition

Employees of the Year

Support Staff	Carol Quintana, Program Assistant
Technical	Diana Melaragno, IT Professional II
Professional	Vivian Brown, Programmer Analyst
Manager	Dale Straw, Asst. Division Engineer, Surface Water Operations
Leadership	Orlyn Bell, Division Engineer, Division 5

Water Commissioners of the Year

Division 1	Robert Stahl	Division 5	Frank Schaffner
Division 2	Joe Flory	Division 6	Kincaid Waldron
Division 3	Wayne Williams	Division 7	Robert Daniels
Division 4	Carl Hurst		

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**Hal Simpson
State Engineer**