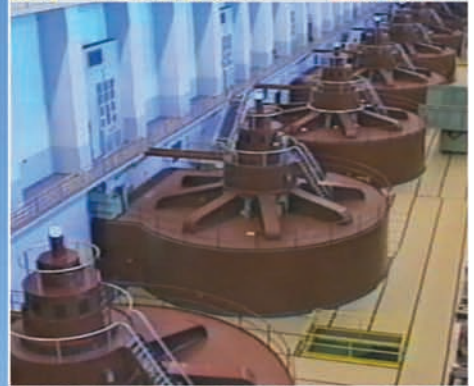


Water 2025: *Preventing Crises and Conflict in the West*

Water 2025 Status Report

August 2005





U.S. Department of the Interior
Bureau of Reclamation



Hoover Dam

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Water 2025

Preventing Crises and Conflict in the West

Secretary of the Interior Gale Norton has made *Water 2025* a key focus for the Department of the Interior because water truly is the “lifeblood” of the American West. *Water 2025* is based on the reality that the economic, social, and environmental health of the West is important to the people of this nation. *Water 2025* is also based on the *reality that the demands for water in many basins of the West exceed the available supply even in normal years.*

When combined with the fact that the West is home to some of the fastest growing communities in the nation, these realities guarantee that water supply crises will become more frequent if we do not act now. In the past century water crises were intense but typically occurred in drought years; they only affected resources and economies of local and regional importance. *Now, however, if we do not act soon, water supply-related crises will affect economies and resources of national and international importance.*

Water 2025 was “road-tested” by the 3000 people who attended the ten meetings held throughout the West in the summer of 2003. The bottom line is that while there was a significant debate over what should or should not be added to *Water 2025*, almost all participants endorsed



American River, CA

the initiative as an approach that will unite, not divide, very divergent interests

This report provides a summary of the achievements of the *Water 2025* program since the time it was initiated, in the spring of 2003. Additionally, this report provides an overview of the framework and objectives of the *Water 2025* program, summarized in the following Six Principles, Five Realities and Four Key Tools. Updates to this report will be provided on an annual basis.

“I have initiated what I call the Four Cs as the cornerstone of my tenure: Conservation through Cooperation, Communication, and Consultation. At the heart of the Four Cs is the belief that for conservation to be successful, the government must involve the people who live and work on the land.”

Gale A. Norton
Secretary of the Interior





Water 2025

Preventing Crises and Conflict in the West

Water 2025 sets forth a framework to focus on meeting water supply challenges in the future. This framework includes:

- ◆ **Six Principles to guide Interior in addressing water problems.**
- ◆ **Five Realities that drive water crises.**
- ◆ **Four Key Tools to help proactively manage scarce water resources.**

Water 2025 is based on principles that must be recognized if we are to minimize or avoid water supply related crises.

Water 2025 Principles

1. *Recognize and respect state, tribal, and federal water rights, contracts, and interstate compacts or decrees of the United States Supreme Court that allocate the right to use water.*
2. *Maintain and modernize existing water facilities so they will continue to provide water and power.*
3. *Enhance water conservation, use efficiency, and resource monitoring to allow existing water supplies to be used more effectively.*
4. *Use collaborative approaches and market based transfers to minimize conflicts.*
5. *Improve water treatment technology, such as desalination, to help increase water supply.*
6. *Existing water supply infrastructure can provide additional benefits for existing and emerging needs for water.*

Water 2025 is based on realities that will shape, if not control, policy level water supply decisions over the next 25 years.

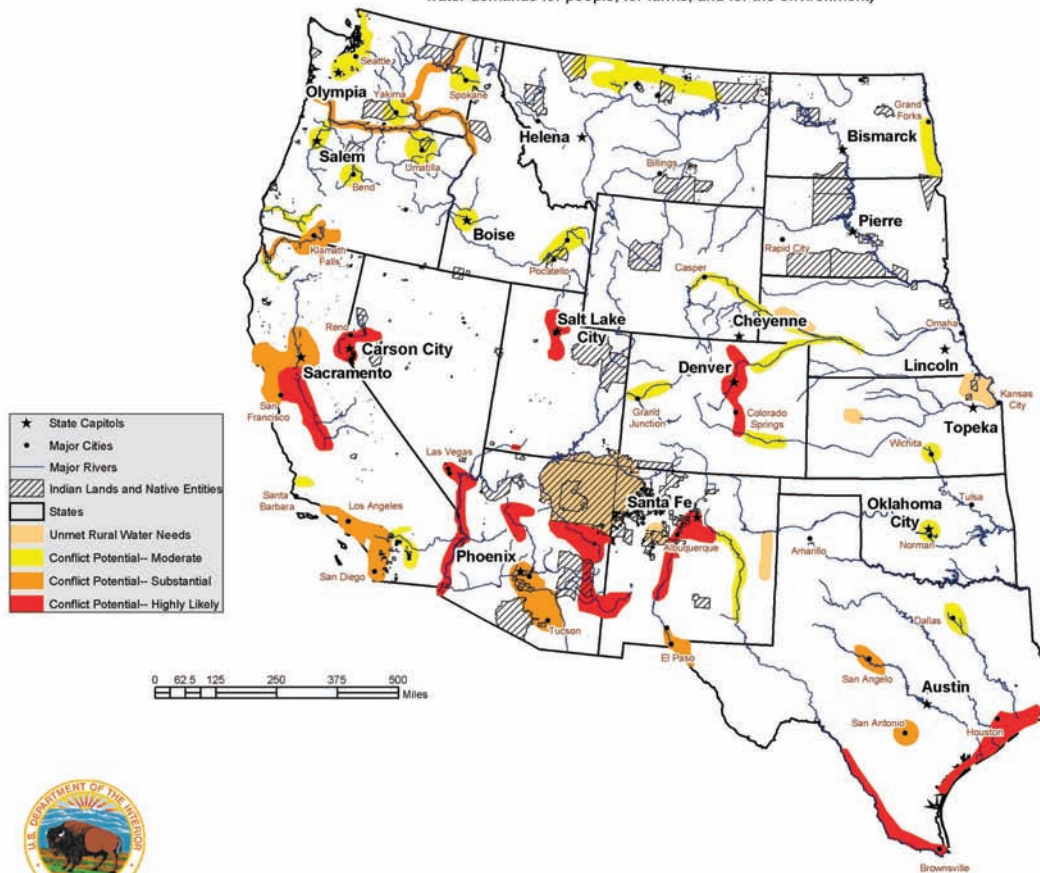
Water 2025 Realities

1. *Explosive population growth in areas of the West where water is already scarce.*
2. *Water shortages occur frequently in the West.*
3. *Over-allocated watersheds can cause crisis and conflict.*
4. *Water facilities are aging.*
5. *Crisis management is not effective in dealing with water conflicts.*



Potential Water Supply Crises by 2025

(Areas where existing supplies are not adequate to meet water demands for people, for farms, and for the environment)



May 2003

The “Potential Water Supply Crises by 2025,” commonly known as the Hot Spot Illustration, was used to begin a dialogue with the States and others in the West on the water supply crises that many areas in the West will likely face in the future. Reclamation looked at data such as hydrologic conditions, weather patterns, endangered species locations, and population growth trends, and then identified where they appeared to converge. These areas became identified as the ‘hot spots’ in the West.



Water 2025 proposes not rhetoric, but pragmatic, reality-based tools that have been tested in the crucible of the real world.

Water 2025 Tools

- 1. Conservation, Efficiency, and Markets** *The increased use of simple tools like water measurement structures, automated control structures, and computer-based system monitoring can allow water users either to stretch their water supplies further or to make part of their supplies available on a willing seller-willing buyer basis for otherwise unmet demands. Explosive population growth and the emergence of the demand for water for environmental restoration and attainment of the goals of the Endangered Species Act will typically define the extent and severity of water supply-related conflicts. The experience of the Klamath basin in 2001 provides an example of the consequences of attempting to use regulatory mechanisms to reallocate water from existing uses to emerging needs. The value of market-based approaches as an alternative is proven by the success of CalFed, the new Klamath water bank, the operation of the Central Valley Project in California, the ag-to-urban transfers in Southern California, and the 50 year-old water market in Northern Colorado.*
- 2. Collaboration** *When it comes to water, people, farms, and the environment all need certainty in order to plan for and meet long-term objectives. Endless litigation rarely, if ever, achieves this goal.*
- 3. Technology** *In some areas, demands on limited surface water supplies can be reduced through the development of alternative water supplies. A range of alternative water supply technologies exists, including desalination and advanced water treatment. While these technologies are important, Interior has chosen to focus on seawater and brackish groundwater desalination because other agencies have a more important role and greater expertise in the development and implementation of the other technologies. In addition, brackish water desalination may provide cost-effective alternatives throughout the West to develop rural drinking water systems by Interior.*
- 4. Remove Institutional Barriers and Increase Interagency Cooperation** *In some instances, western water that might otherwise be available is unavailable due to existing policy or legal constraints. Analysis of institutional barriers may determine whether agency policy revisions or legislative changes might alleviate some impediments toward resolving water conflicts. Cooperation among federal agencies can help focus federal dollars and resources to better manage supplies in water short areas.*

Testing Water 2025

The Denver Water 2025 Conference

In her opening remarks at the conference on June 6, 2003, Secretary Norton outlined the purpose of *Water 2025* as a process aimed at expanding the dialog on ways to prevent the chronic water supply problems facing many communities in the coming decades.

The Denver conference was the first of ten consulting sessions in Western cities aimed at widening the discussion on ways to prevent the chronic water supply problems facing many communities in the coming decades. It brought together approximately three-hundred people, including leaders in water management and policy representing diverse interests and backgrounds, including government, agriculture, tribes, environmental organizations, and legal experts.

“Because of chronic water supply problems and persistent drought that has plagued the West, federal financial and technical resources are being concentrated in key Western watersheds.”

Mark Rey
Under Secretary for Natural Resources and Environment
USDA
Water 2025 Remarks – 6/6/03

Many top government officials participated in the conference, including Colorado Governor Bill Owens; USDA Undersecretary for Natural Resources and the Environment Mark Rey; Interior Assistant Secretary Bennett Raley; Bureau of Reclamation Commissioner John Keys; and New Mexico Attorney General Patricia Madrid.

After the opening remarks, representatives of key interest groups took part in discussion panels that covered a wide range of topics and issues. Those



“Water 2025 emphasizes solving problems through mutual understanding and agreements instead of looking for ways to assert an increased federal presence.”

Gale A. Norton
Secretary of the Interior
Water 2025 Opening Remarks

participating in panels included Karl Dreher, Idaho Department of Water Resources, who represented the Western States Water Council; Greg Walcher, Colorado Department of Natural Resources; Ron Gastelum, Metropolitan Water District; Chips Barry, Denver Water Board; and Rita Maguire, Arizona Center for Public Policy.

A broad range of topics was presented by the panelists, addressing state and local perspectives, approaches to resolving conflict, and getting beyond crisis management.



Discussions on finding approaches to resolving conflict brought in Mike Applegate, Northern Colorado Water Conservancy District; Dan Luecke, Environment and Water Resources Consultant; Rod Lewis, Gila River Indian Community; and John Sullivan, National Water Resources Association.

Speakers emphasized that government agencies and water users need to cooperate in evaluating water

policies affecting city, agricultural and recreational water users. They called on efforts that focus on conservation, water market flexibility, improving existing reservoirs and the possibility of building new storage.

The idea behind *Water 2025* is to help launch local, collaborative efforts to stretch existing water supplies and solve decades-old water conflicts among states, Indian tribes, farmers and environmental groups.





Regional Consulting Conferences Local Solutions to Local Challenges

Not one of the seventeen Western states is like the other; however, they all have something in common – rapidly growing economies, contentious environmental issues, exploding population growth, and the reality of a finite amount of water.

Following the Denver conference, Interior conducted nine regional *Water 2025* consulting sessions across the West during July and August 2003, in an attempt to address conflicting needs in areas where water resources are already stressed. These conferences underscored the message that meeting future water challenges in order to sustain the West's quality of life must begin with local participation.

More than 3,000 people, representing a cross section of interests, affiliations, and political backgrounds, attended the sessions, which were held in Phoenix, Las Vegas, Sacramento, Salt Lake City, Boise, Billings, Albuquerque, and Austin. The U.S. Geological Survey hosted the final meeting, a Science and Technological Workshop, in Denver in November 2003.

Although each location had issues unique to its region, the overall message was that water is a finite resource requiring a balanced, local approach to meet the challenges ahead.

Each session followed a similar format, bringing in elected officials and distinguished panelists who represented every aspect of water management or use – farmers, ranchers and other irrigators, tribes, environmental interests, and all levels of government – to engage participants in a series of open and frank



discussions. The consultation sessions were interactive, providing a unique opportunity to hear directly from citizens who have a vested interest in Western water issues.

A number of themes were repeated throughout all the consulting sessions. For example, it was noted that *Water 2025* reinforces the idea that

open communication and cooperation among diverse interest groups is needed to avoid conflict and continuing litigation in the mostly arid West. *Water 2025* was universally seen as promoting a collaborative process that can divert special interests from using the courts as the first alternative to problem solving.

“Those interested in water often have more in common than differences . . .”

*Tom Libby
Chairman, Oklahoma Chapter
of the Sierra Club*

Keeping local decisions at the local level was a continuing message from participants, who felt that policy decisions made outside their respective state or region may not always be appropriate or applicable to the challenges they face. *Water 2025* was welcomed throughout the West as a process to develop partnerships that can lead to success in managing a broad range of water interests including irrigators, municipal and industrial, environmental, recreation, educational, water rights, water quality, regulation, scientific research, land use, and every level of government.



In Sacramento, it was accepted that effective and equitable water management in California and nearby States is a daunting task, but that viable and long-lasting solutions may be found by matching the task with the proper tools in *Water 2025*.

“In the past, winning and losing was an option, but when stakes are so high, winning and losing isn’t an option . . . We need to try to find a friendlier way.”

*Ane Deister
General Manager
El Dorado Irrigation District*

The value of maintaining existing Reclamation storage projects was an essential point of discussion. Many participants called for flexible approaches in water management, conceding that a one-size fits-all approach will not work on many local levels. Nevertheless, farmers, ranchers, irrigators, and municipalities repeatedly raised the need for new water storage to meet these currently unmet demands.

While overall welcoming and supportive of the concepts behind *Water 2025*, representatives of the environmental community consistently rejected this idea of new storage, instead urging conservation and redirection of water usage.



This four-gate diversion structure was retrofitted with an automation system that is solar-powered.

The agricultural community also was very concerned about the transfer of water away from growing crops to other municipal or environmental uses, especially on a permanent basis. Permanent transfers of water rights to other uses can negatively affect entire communities, both socially and economically.

Water 2025 occupies the middle ground in this debate, focusing on what can be done now to alleviate growing conflicts and crises over water rather than on all that cannot be done, whether because of disagreement of interested parties or due to institutional barriers to change.

During the Salt Lake City session, the Bonneville Unit Pilot Project was cited as an example of a collaborative approach that worked in Reclamation’s Upper Colorado Region, where conservation, education and improved technology are important components in stretching limited water resources.

In arid and drought-ridden New Mexico, population growth and the threat of water emergencies brought the

call for policy makers to prioritize the limited water resources among conflicting interests. The requirements of the Endangered Species Act in dealing with silvery minnow habitat along the Rio Grande River were seen as contentious for all parties in New Mexico.



Boise, Idaho, participants indicated that adjudication of water rights would help prevent problems such as those faced in Oregon's Klamath Basin. Completing the adjudication process and resolving tribal claims were seen as essential for avoiding crisis.

Water 2025's suggestions for new research and technologies, particularly in the area of desalination, were considered by most – particularly tribes – to be positive. Affordable desalination can provide potable water in more remote rural areas. New technologies can make the process cheaper than trying to move available water long distances.

A representative of the Chippewa Cree Tribe of the Rocky Boys Reservation in Montana indicated that Tribes need a level playing field and collaboration for water management that benefits all. As the Tribe grows, so too does its need for water.

In Austin, Texas, the message from irrigation districts, government agencies, private businesses, and environmental groups matched the tenor of those miles away, in that water policy should be focused on supply, efficient practices, and innovative financing tools.



“We need to set up a process where all are at the table, all heard, all listen, and at the end a decision is made that is binding. We need a process that people have faith in, believe in, and where they are held to the outcome.”

*James McClure
Former U.S. Senator (R-Idaho)*

On November 4, 2003, the U.S. Geological Survey and the Bureau of Reclamation hosted the *Water 2025* Science and Technology Workshop, which brought together 200 participants, including scientists representing a variety of water management agencies, environmental organizations, and several universities.

Workshop participants voiced concern about future water management challenges, but in general approved of the process put forth by *Water 2025*. Using a scientific approach to address such issues is considered a central

element when applying practical policy changes and key to preventing crises and conflict in the future.

While there predictably was not universal agreement among participants about the details, *Water 2025* was enthusiastically received even by those groups that normally are bitter opponents in the modern West's water conflicts. All participants saw the initiative's proposals as solid first steps in reaching reasonable and workable compromises in areas where water supplies are over-allocated or simply not sufficient. The high level of participation at every meeting, and the large amount of news media coverage, demonstrate not only the need, but also the desire for an end to conflict over this most precious of resources.



Water 2025

Broad Media Coverage Outlined the Work Ahead

Los Angeles Times
Stretching the West's Water
Water 2025 can significantly stretch the West's water supply and resolve conflicts that prevent the most efficient use of water.

The Salt Lake Tribune
www.sltrib.com
Norton Urges a Water Truce
"When water crises...threaten your way of life... we cannot afford to stand on the sidelines"

USA TODAY

The [Water 2025] initiative suggests a bold and even activist role...

The New York Times
Expect the World
Dry Prospects
Water 2025...comes not a moment too soon

The Sacramento Bee
Exercise in Pragmatism
West must quench thirst on tight budget

Billings Gazette
Don't Let Opportunity Wash Away
There is no issue in the West as contentious and divisive as water. [Water 2025] is an opportunity as valuable as the water we rely upon. Don't let it drift away.

With a drought of historic proportions bearing down on large portions of the settled West, *Water 2025* gained national, regional and local news coverage that provided a balanced view of the struggles facing the Department of the Interior in establishing a meaningful dialogue among interest groups to find workable solutions for future water needs in the West.

“If the West were still sparsely settled, the severity of the drought would be serious enough. Now, the drought is bearing down on an enormous number of people...”

New York Times 6/2/03

The Associated Press first reported news about *Water 2025* in late February 2003 in a national news piece nearly three months ahead of Secretary Norton’s official announcement. The AP article, headlined “Interior secretary working on ways to ease water conflicts,” reported on the President’s FY 2004 budget rollout.

Print and broadcast media continued to follow *Water 2025* with constructive reporting that offered some critical observations on the immense task at hand along with some more positive tones. Coverage continued from February through November with guest editorials authored by Secretary Norton and Reclamation Commissioner John Keys in several newspapers in the West.



“Water 2025 can significantly stretch the West’s water supply and resolve conflicts that prevent the most efficient use of water... somehow California must liberate itself from old water feuds and develop the calmer tools Norton has proposed.”

Los Angeles Times 6/10/03

Key decision-makers and administrative policy representatives participated in numerous editorial board meetings throughout the West.

The media centered on points on both sides of water management and the proposals brought forth by *Water 2025*. More than thirty stories appeared throughout the West, beginning with a front page story in *USA Today* on May 2. *Water 2025* proceeded to be a top story in some locations until the Denver kickoff conference in June.

“The Bush administration will unveil an initiative next week that would put the federal government in the lead role in trying to avert water shortages among some of the fastest-growing areas in the arid Western States.”

USA Today 05/2/03

Additional stories appeared in *The Sacramento Bee*, *Albuquerque Journal*, *Rocky Mountain News*, *The Idaho Statesman*, *Deseret News*, *Las Vegas Sun*, *Omaha World-Herald*, *Albuquerque Tribune*, *Fresno Bee*, *Salt Lake Tribune*, *The Los Angeles Times* and *The New York Times*. These papers featured the stories of threatened water and scarcity, and Interior’s promise to provide leadership.

During each of the regional consulting conferences and the Science and Technology Workshop, a press availability was offered that presented additional media opportunities. The coverage was widespread and uniformly positive.

The print and broadcast media coverage of the *Water 2025* initiative since February 2003 was thorough and in-depth. Interior officials and Reclamation representatives at local and national offices responded both in public forums and editorial board meetings for nearly nine months.

In the final analysis, the news coverage has included well over 100 news stories and editorials nationwide.



A Central Arizona Project lined canal



Water 2025 Feedback

About one-hundred replies to *Water 2025* were received in the form of written correspondence and email responses. Although the vast majority of reactions were favorable, there were responses that questioned the validity of *Water 2025*.

Responses came in from Members of Congress, State lawmakers, environmental organizations, irrigation districts, water management associations, and private citizens. Taken as a whole, the written comments submitted about *Water 2025* were reflective of the makeup of attendees at the consultation sessions.

“TU appreciates Interior’s explicit recognition of the tremendous opportunity that improving facilities, efficiency, and operations at the Bureau of Reclamation projects for meeting the demands of the growing Western population, including for healthier streams and ecosystems. We agree with several of the underlying principles of Water 2025.”

*Charles F. Gauvin
President and Chief Executive
Officer, Trout Unlimited
Letter: June 2, 2003*





Water 2025 Moving Forward

The feedback from States, tribes and the public who attended the consulting conferences or provided input in other ways presented an opportunity to step back and examine how *Water 2025* can play an important role in meeting water supply challenges, now and in the future.

Even as answers continue to be sought, *Water 2025* will continue to facilitate the dialog needed to help civic leaders, farmers, conservationists, and citizens in the areas such as those identified on the “Hot Spot” illustration [*Potential Water Supply Crises by 2025*, May 2003 shown on page 3] on the situation that their communities are likely to face over future water supplies.

Water 2025 is off to a good start with \$8.4 million in FY 2004 for the Western Water Initiative, the initial step to *Water 2025*; \$19.5 million in FY 2005; and the President’s request of \$30 million in FY 2006.

The Challenge Grant Program is focused on achieving the goals identified in *Water 2025*, particularly in water conservation, efficiency and markets, and collaboration. Emphasis is on projects that can be completed within twenty-four months.

In many cases, implementation and installation of new water conservation and efficiency improvements through cooperative partnerships will result in an increased ability to meet otherwise conflicting demands for water. Where allowed by State and federal law, implementation and use of water banks and water markets as mechanisms for preserving irrigated agriculture, while meeting other existing water supply needs, will also stretch water supplies in areas facing water shortages.

Through the Challenge Grant Program, Reclamation awards grants through a competitive process that provides incentives for states and local entities who will create water markets and make more efficient use



Lake Mead

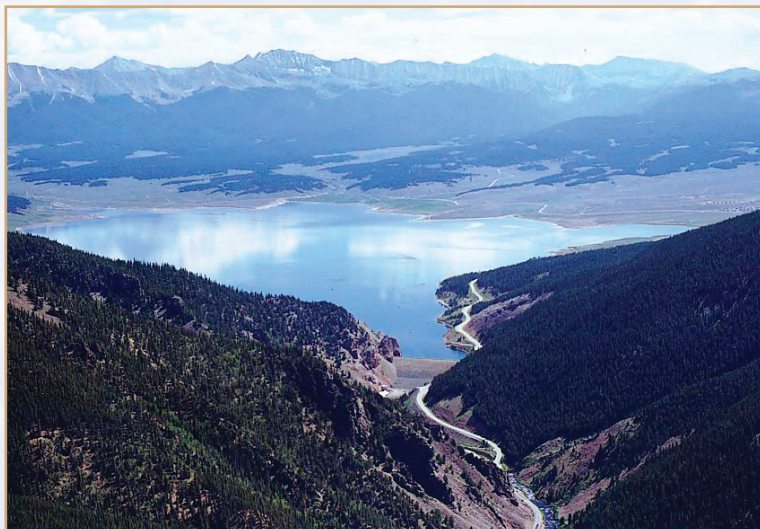
of existing water supplies. Performance measures are included in each grant in order to gage the success of the projects. Performance measures include:

- ◆ Conserved water contributes toward established or new water markets or banks.
- ◆ Amount of water conserved, measured, managed and tracked through new water measurement/management technologies versus total water diverted.
- ◆ Reasonableness of costs for the benefits gained.
- ◆ Number of non-Reclamation partners (e.g. state, city, other federal, or interest group) involved.
- ◆ Demonstrates innovative approach to water conservation and water management.
- ◆ Demonstrates stakeholder involvement and acceptance, and is likely to result in reduced conflict through contributions to collaborative efforts.



Examples of ways to stretch limited water supplies through the *Water 2025* program include:

- ◆ Providing irrigators and other water users the opportunity to rent, lease or sell water for agricultural or urban uses with the water right remaining in agriculture.
- ◆ Developing water accounts that can provide a mechanism for willing buyers to purchase water from willing sellers in order to meet important ecological restoration goals or other specific goals and objectives that would avoid or reduce water conflicts.
- ◆ Retrofitting and modernizing existing facilities to improve water management through the use of new technologies can conserve additional water. Technology includes automating control structures with associated telemetry equipment for off-site control, and water management programs such as SCADA (Supervisory Control and Data Acquisition) to remotely monitor and operate key river and canal facilities.
- ◆ Realizing water savings and corresponding increases in available water supplies by lining currently unlined canals or converting open canals to pipeline.
- ◆ Installing new measuring devices that would allow water supplies to be more accurately measured and accounted will likely result in more efficient water use.



Taylor Park Dam, CO

This Challenge Grant Program, administered through the Bureau of Reclamation, sought proposals from irrigation and water districts to make more efficient use of existing water supplies through water conservation, efficiency and water market projects.

The Bureau of Reclamation received more than one-hundred proposals representing over \$98 million in water delivery system improvements across the West. Of that, the federal share requested was more than \$25 million, with the rest made up by matching funds from non-federal sources such as irrigation and water districts.

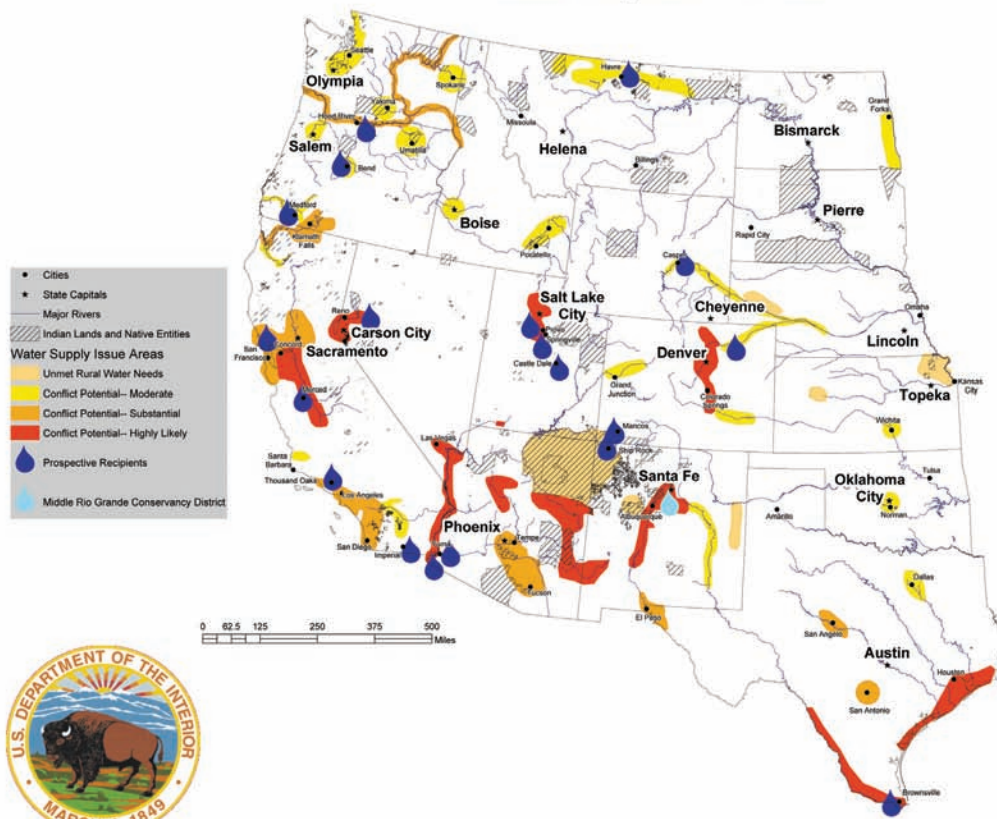
“This response underscores the significance of Water 2025 to Western water users and proves the success of the Challenge Grant concept. It demonstrates a widespread eagerness to work collaboratively to improve the way water is managed across the West and address local needs. These conservation improvements will help prevent crises and conflicts over our limited water resources in the region”

Gale A. Norton
Secretary of the Interior

With the support of Congress in the FY 2004 Budget and in keeping with the spirit of her 4Cs, Secretary Norton designated \$4.0 million to the Secretary’s *Water 2025* Challenge Grant Program in November 2003.



Water 2025 Secretarial Challenge Grant Projects: FY 2004



August 2004

The nineteen projects selected are located in ten states. The total investment for all projects selected for grants is more than \$29 million, which includes the matching contributions of non-federal partners. These entities will now work with Reclamation to secure a cooperative agreement and complete the regulatory processes. Groundbreaking on the projects began in the fall of 2004, and work is expected to be completed in October, 2006, twenty-four months from the date that the grants were awarded.

A complete list of the nineteen projects by state follows.



ARIZONA

Gila Gravity Main Canal Board

In partnership with the City of Yuma and NAD Bank, the Board will make canal system improvements to conserve water, restore canal capacity and improve operation efficiency. Five irrigation districts, the City of Yuma and other domestic water users will benefit from the project. Improvements include sealing canals at high seepage points and removing sediment from the Gila Main Gravity Canal. Additional work includes installing a Supervisory Control and Data Acquisition (SCADA) system, a complex system to control a canal system by providing more precise measurement and remote control of flow rates and water levels. Resulting savings will be about 45,000 acre-feet of water per year. The conserved water will be available for other Colorado River users. The total project cost is \$2,207,775 with a *Water 2025* contribution of \$284,000.

Yuma County Water Users Association, Yuma

The Association will expand a Supervisory Control and Data Acquisition (SCADA) system and implement a new water tracking and water accounting system. The project also includes reconstruction of key diversion structures along the main canal that will facilitate remote control of water flows and levels. This modernization will reduce diversions from the Colorado River and provide an overall savings in water diversions of 12,000-20,000 acre-feet per year. The total project cost is \$615,552, with a *Water 2025* contribution of \$246,221.



Water loss in unlined canals

Today most irrigation water delivery canals (top) in the West are not lined. Reclamation's research has shown that a return of \$3 to \$5 in conserved water can be possible for every \$1 spent on canal modernization.



Before (left)
and after (right)
automation of
headgate



CALIFORNIA

Calleguas Municipal Water District, Thousand Oaks The District will install automated monitoring devices to twenty-three water distributors to allow the District to implement new rate structures. These devices will improve distribution during peak demand and will encourage more efficient water use, conserve water and manage local groundwater supplies in concert with imported water. The District covers an area of approximately 350 square miles in Ventura County. Communities served include the cities of Oxnard, Camarillo, Thousand Oaks, Simi Valley, Moorpark, and Port Hueneme, as well as Oak Park, Santa Rose Valley, Bell Canyon, Lake Sherwood, Somis, Camarillo Estates, and Camarillo Heights. This project will reduce demand on the Metropolitan Water District and the Colorado River, resulting in a savings of 5,500 acre-feet per year. The total project cost is \$3,395,442 with a *Water 2025* contribution of \$300,000.

Contra Costa Water District, Concord The District will install 2,100 feet of pipe in the Contra Costa Canal to isolate drinking water from agricultural saline ground water seepage. The canal conveys drinking water to 450,000 residents and vital industries in Contra Costa County. This project provides benefits statewide as well as for local stakeholders. The project will improve the ability of the Central Valley Project to meet established Sacramento-San Joaquin Delta water quality standards because of long-standing local degradation on this reach of the canal. Water savings will range from 9,000 to 34,000 acre-feet per year, depending on the water supply conditions. This amounts to a savings of an average of \$1.4 million each year. The total project cost is \$9,132,716, with a *Water 2025* contribution of \$200,000.

Imperial Irrigation District, El Centro The District will strategically place four flow meter stations along the All American Canal to improve monitoring of delivery water, particularly during high and low flow periods. The four stations will measure flow into the Imperial Valley, and at the diversions to Mexico and Coachella Valley. This project will result in these three areas receiving the proper allotment of water necessary for agricultural, municipal and industrial uses. Newly measured and accounted-for supply will result in more efficient distribution of water, reducing demand on the Colorado River and saving 34,500 acre-feet per year. The total project cost is \$230,452, with a *Water 2025* contribution of \$115,226.



Stevinson Water District - dirt canal to be replaced by pipeline.

Stevinson Water District, Merced The District will replace 23,067 feet of open canals with pipe to control high water tables fed by seepage, water conservation, improved delivery flexibility and reduction on operational spillage. Increased measurements and improved system responsiveness will enhance irrigation service and is expected to result in further water conservation. The project will save approximately 1,155 acre-feet per year, which may be sold to Reclamation for the San Luis National Wildlife Refuge. The total project cost is \$1,556,500, with a *Water 2025* contribution of \$300,000.



COLORADO

Mancos Water Conservancy District, Mancos

This project will test the effectiveness of different materials for canal lining on 300 feet of the Jackson Gulch Inlet Canal. The inlet canal is the only source of water into Jackson Gulch Reservoir. The water users who depend on the reservoir include agricultural communities in the surrounding area, the town of Mancos and Mesa Verde National Park. Lining the canal will provide the District with 10-15 percent more water, easing tensions between domestic and agricultural users. The total project cost is \$41,082, with a *Water 2025* contribution of \$19,338.



Mancos Water Conservancy District

Lower South Platte Water Conservancy District

The District will directly reimburse individuals, or groups, up to 50 percent towards the purchase and installation of flow measuring devices for large-scale wells, recharge facilities or ditch diversions within the District boundaries. Over 10,000 acre-feet pumped per year is estimated to be inaccurately accounted for. The water that is accurately quantified and replaced to the South Platte River can be used by all surface water users. The total project cost is \$1,129,079 with a *Water 2025* contribution of \$300,000.



Paradise Valley Irrigation District
Hillside ditch lateral to be replaced by buried pipe.

MONTANA

Paradise Valley Irrigation District, Chinook

The District will replace 9,000 feet of leaky hillside canal with a pressure pipeline system, conserving 1,000 acre-feet per year of water. It will be one of the first in the area and a significant improvement over the old system. This project will conserve water for the District by eliminating seepage in the canal and improve operation and control in the main canal. Efficiency levels will nearly be 100 percent with the new pipeline system, compared to the current efficiency rate of 40-45 percent. Irrigation seasons will be extended during drought years by making more use of the water that is available. The total project cost is \$524,215, with a *Water 2025* contribution of \$262,107.



Upper Klamath Lake, OR

NEW MEXICO

San Juan River Dineh Water Users, Inc., Shiprock

The project will convert three lateral ditches to underground pipelines, potentially saving 5,600 acre-feet each year for other water users on the main canal. Converting all three lateral ditches into underground pipeline will improve equitable water distribution, increase conveyance efficiency, allow farmers to pursue new irrigation technologies, reduce demand on the San Juan River and reduce operation and maintenance costs. The total project cost is \$751,000, with a *Water 2025* contribution of \$200,000.



Typical canal section near start of lateral, NM



NEVADA

Truckee Carson Irrigation District and City of Fernly

This project will improve the control of the Gilpin Spill structure by automating gate changes through installation of remote-controlled gates and telemetry at one location on the Truckee Canal. This project will allow the District to make more frequent and timelier changes to meet its demand more accurately, thus reducing the amount of water diverted from the Truckee River. The saved water – approximately 3,000 acre-feet per year – will flow downstream and enhance instream flows or be stored upstream to meet future needs. The total project cost is \$300,000, with a *Water 2025* contribution of \$150,000.



OREGON

Central Oregon Irrigation District, Bend

This project involves numerous partners – seven irrigation districts, six cities, three tribes and the Deschutes Resource Conservancy. The project addresses long-term basin water needs by establishing a pilot water bank, with a long-term potential savings of up to 326,522 acre-feet a year. The project demonstrates collective partnering of basin interests and addresses many institutional constraints. The total cost of the project is \$588,750, with a *Water 2025* contribution of \$233,750.



Medford Irrigation District - installation of pipeline.

Farmers Irrigation District, Hood River

The District will improve its water delivery system by replacing 8.6 miles of open canals with high quality piping, thus conserving an average of 40 percent of current water usage over the course of the season. The project will market saved water (1,500-3,500 acre-feet per year) for instream use in a fish habitat area. The total cost of the project is \$6,382,973, with a *Water 2025* contribution of \$300,000.

Medford Irrigation District, Medford

The District proposes an innovative approach to address water shortages for irrigation and instream uses by replacing 2,500 feet of an antiquated, open canal with 66-inch pipeline. This project will save 94 acre-feet per year, improve delivery efficiency and reduce maintenance costs. It also will remove three fish passage barriers and open up three miles of historic steelhead trout habitat area. The total cost of the project is \$602,032, with a *Water 2025* contribution of \$300,000.



Solar-powered automated headgate

TEXAS

Harlingen Irrigation District, Harlingen

The District will purchase and install 225 on-farm delivery site meters for more precise water measurement and efficient water delivery. The saved water – 3,464 acre-feet per year – will enable continued farming during droughts and increase the length of the irrigation season. On-farm metering will help the District achieve its goal of 100 percent volumetric pricing of water delivered to its users. The total cost of the project is \$602,500, with a *Water 2025* contribution of \$300,000.



UTAH

Emery Water Conservancy District, Castle Dale

The District will install automatic remote controls at three dams and automate diversions on four creeks in the Green River Basin. The devices will be integrated with existing SCADA software. The District also will install measuring weirs, upgrade weather stations and establish an online irrigation advisory program. Water savings are estimated to be between 10 and 20 percent. The total cost of the project is \$535,520, with a *Water 2025* contribution of \$257,910.

Provo River Water Users Association, Pleasant Grove

The Association will meter, control and screen improvements to the existing Beaver Creek Diversion structure and canal improvements to the Weber-Provo Canal. This project will result in the conservation of approximately 4,200 acre feet each year and a savings of \$2,500 per year in operations and maintenance costs. The total cost of the project is \$426,203 with a *Water 2025* contribution of \$150,000.

Springville Irrigation District, Springville

The District will replace an open lateral in Provo County, with 550 feet of pipe to reduce seepage. It also will construct a new diversion structure and install a measuring weir to reduce water loss. The project will save 220 acre-feet per year and possibly benefit the June sucker, an endangered fish. The total cost of the project is \$58,000, with a *Water 2025* contribution of \$29,000.



Emery Water Conservancy District - installation of automation equipment.



Original control gates on Langley turnout structure on Noble Ditch near Fruitland, ID

Structure was automated (right) to maintain desired canal flows. This helps operators monitor operations and reduce operational spills and shortages.





Agriculture near Ashton, ID – Minidoka Project



Automated diversions

Automated diversion in to 7-mile Slough, a natural side-channel of the Payette River used to convey irrigation water to a number of irrigation diversions. Structure was built in the 1930's. New measurement flume (bottom) was constructed to provide accurate measurement for control and accounting.



Canal lining

WYOMING

Casper-Alcova Irrigation District, Casper

The District will replace a portion of unlined canal with 6,508 feet of PVC pipe and install new head gates, valves and flow measurement devices to save approximately 490 acre-feet per year. When finished, the project will potentially conserve 31.7 percent of the total available water in the two lateral systems and substantially reduce operating and maintenance costs. The District intends to market the water savings as it has done in the past. The total cost of the project is \$502,189, with a *Water 2025* contribution of \$232,215.



Improving Technology

Of the \$8.4 million appropriated for Reclamation's *Water 2025* program in Fiscal Year 2004, Congress directed about half to be invested in targeted areas and projects like the Middle Rio Grande Conservancy District in New Mexico, the Desert Research Institute in Nevada, and the Ohio View Consortium in Ohio.

Middle Rio Grande Conservancy District in New Mexico

\$1,750,000 was directed by Congress to improve and modernize irrigation surface water conveyance facilities of the Middle Rio Grande Conservancy District to increase water conveyance efficiency, reduce system losses due to seepage and evaporation, and improve water management in the middle Rio Grande Valley. This system, originally constructed during the 1930s and rebuilt in the 1950s, and 1960s after flood damage, consists of 1,238 miles of canals and drains serving approximately 70,000 irrigated acres along 150 miles of the Rio Grande. Work on the District will continue the automation of river diversions, canal flow controls, and waste ways; line delivery canals; and, install additional new gages.



Middle Rio Grande Water Measurement

Records and transmits water flow data to District and Reclamation through telemetry station on right.

Desert Research Institute, Nevada

Of the funds provided for the Western Water Initiative (*Water 2025*), \$1,000,000 was directed for the Desert Research Institute to address water quality and environmental issues in the West. Reclamation is working with Desert Research Institute on the following projects:

Western United States

Conduct water chemistry analysis and develop application protocols that satisfy state and federal water quality standards that would enable widespread use of polyacrylamide (PAM) as a low cost, effective option to significantly reduce irrigation canal seepage throughout the seventeen Reclamation states.

Truckee River, Reno, Nevada

Quantify water efficiency, quantity and environmental factors to the Truckee River that would result from automating checks on the Truckee Canal that are used to make water deliveries to the Newlands projects. Automating the checks has the potential to have positive impacts on water quantity and environmental issues associated with Reclamation operations.

Las Vegas Wash, Lake Mead, Nevada

Determine baseline conditions regarding sediment transport in the Las Vegas Wash and tributaries that flow into Lake Mead. Understanding the associated effects of sediment accumulation to water storage is essential for Reclamation to manage Reclamation's operations and ensure reliable downstream water deliveries.



Ohio View Consortium, Ohio

When Congress appropriated \$1,000,000 to Ohio View Consortium in FY 2004, Reclamation entered into a new partnership with the International Center for Water Resources Management at Central State University in Ohio, the Ohio View Consortium, and Colorado State University. This new collaborative effort will develop advanced remote sensing technologies to help Reclamation manage water resources in areas where there are current or potential water conflicts.

“This partnership is a great opportunity for Reclamation. It will support the goals of Water 2025 by helping us and our customers manage for future water needs.”

Commissioner John Keys

The new remote sensing technologies will improve Reclamation’s ability to estimate snow water equivalents and evapotranspiration losses. This data will help Reclamation gain a better understanding of water supplies and demands so it can be more efficient in delivering water when and where it is needed.



Snow survey

Improving Technology

Wastewater, salty and other impaired water can be purified to increase their utility. *Water 2025’s* goal is to encourage technological advances and identify new supplies. Reclamation can facilitate research to reduce the high costs that slow adoption of new desalination technologies.



Yuma Desalting Plant

Desalination

The fundamental goals in desalination are to decrease the cost of desalination technology, and facilitate the creation of new water supplies from desalination technology. Improving desalination technology will focus on cooperative research demonstration projects, pilot-scale projects, and research studies that are competed and cost shared

Reclamation is facilitating research efforts that will reduce the high costs that slow the adoption of new desalination technologies. In FY 2004, Reclamation’s Science and Technology Program offered a \$3.0 million competitive grant program for research, pilot and demonstration proposals to improve desalination technology. Desalination proposals that demonstrate a role in helping to avoid crisis and conflict over water supplies in the West were selected and awarded in September 2004.



Congress Approved \$19.5 Million in Fiscal Year 2005

Congress approved \$19.5 million in Fiscal Year 2005, amounting to \$17,251,012 after underfinancing and rescission. This represents an increase of \$11 million over the \$8.4 million appropriated in FY 2004.

Approximately \$4.7 million (before underfinancing and rescission) was allocated to Congressional earmarks: \$1.7 million will provide for continued water conservation, efficiency and management improvements related to the Middle Rio Grande Conservancy District. Additionally, \$2.0 million will allow Reclamation to continue working with Desert Research Institute to address water quality and environmental issues through the projects described on page 23. Another \$1.0 million

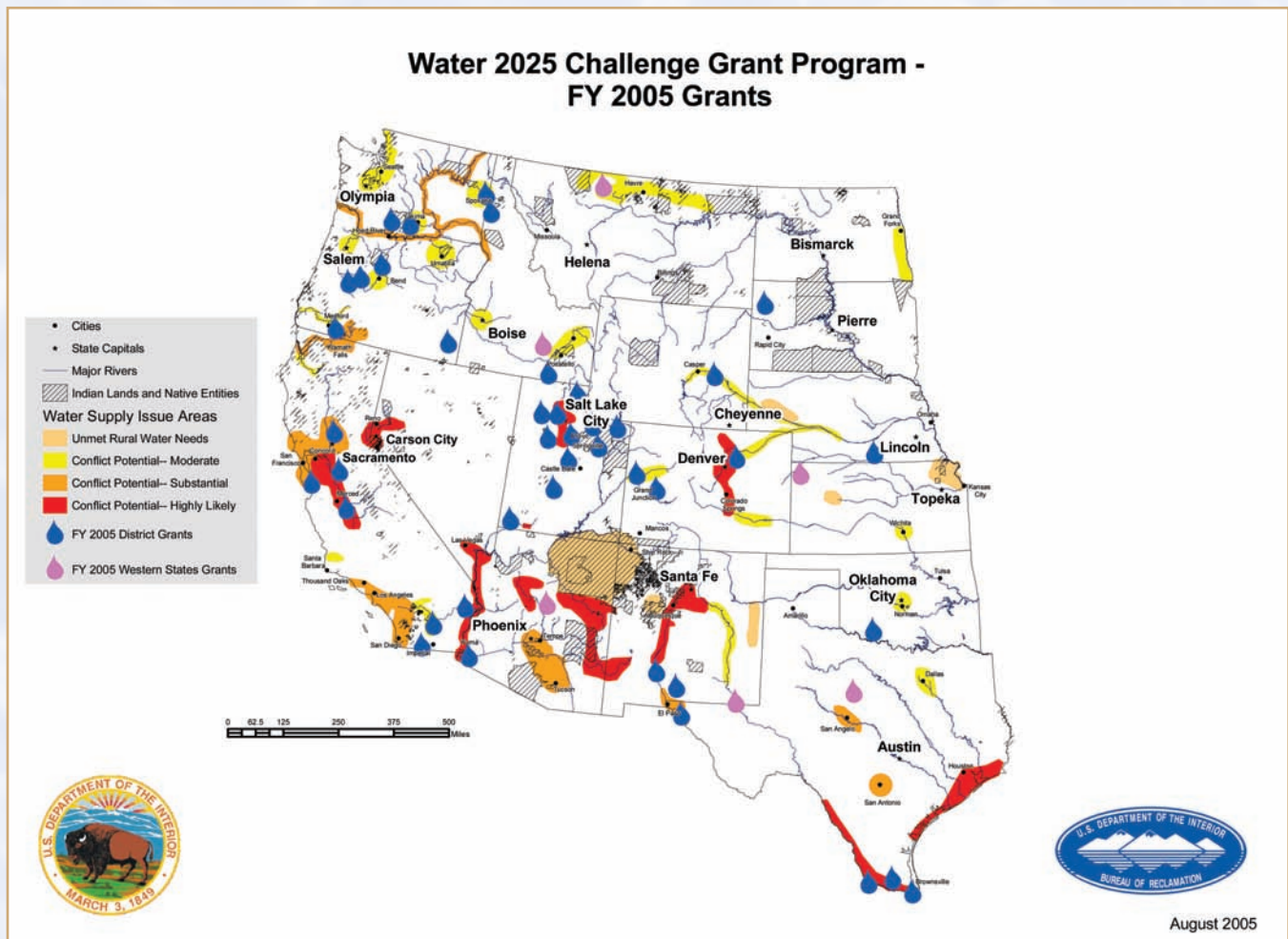
will continue Reclamation's work with the Ohio View Consortium to develop remote sensing technologies to improve water management

Challenge Grant Program

As in FY 2004, the Challenge Grant Program continues to be an integral part of *Water 2025* in FY 2005.

In administering *Water 2025*, leveraging limited Federal dollars continues to be important. In FY 2005, \$10 million is allocated to the Challenge Grant Program. This represents an increase of \$6 million over the amount allocated to the Challenge Grant Program in

Water 2025 Challenge Grant Program -
FY 2005 Grants



August 2005



FY 2004. For the \$10 million available, Reclamation received 117 proposals requesting more than \$35 million in Federal finding. Of those, forty-three proposals in thirteen states have been selected. Awards for the forty-three projects are currently under way. The total investment for the forty-three projects is more than \$27 million, which includes more than \$17 million in matching contributions by the non-Federal partners.

Also in FY 2005, Reclamation is working with the seventeen Western States on *Water 2025* activities. Section 206 of the Consolidated Appropriations Act (PL 108-447), adopted in November 2004, authorized Reclamation to enter into cooperative agreements with any of the seventeen Western States, in addition to irrigation and water districts, and other entities with water delivery authority, to provide funds for projects that improve water conservation and efficiency and water management.

In the spring of 2005, Reclamation launched its *Water 2025* Challenge Grant Program for Western States. For the \$1 million available, Reclamation received twenty-five proposals from thirteen States. Six projects by Western States were selected for award, representing



New irrigation diversion, Central ID



Salmon jumping fish ladder

an investment of more than \$2 million in water improvements, including matching contributions by the States. The six projects selected are summarized below:

Idaho

The Idaho Water Resources Board will develop a groundwater-recharge project for the Eastern Snake Plain Aquifer, using unappropriated natural surface-water flows from the Upper Snake River Basin. The Board will construct a pipeline from the W-Canal to two recharge basins. The recharge project would receive about 10,000 acre-feet of water per year. The total cost of the project is \$519,126 with a *Water 2025* contribution of \$250,000.

Kansas

The Kansas Department of Agriculture will install flow-measurement equipment on one-hundred diversions in the Republican River basin. The real-time monitoring of the diversions will enhance water-management and water-marketing opportunities between senior and junior water rights holders. Irrigators in the basin have had to curtail diversions in five of the six previous years. The total project will cost \$495,698 with a *Water 2025* contribution of \$230,720.



Texas

The Texas Water Development Board will purchase ten acoustical leak-detection units and make them available to public water-supply systems and analyze statewide public water-system loss audits in preparation of setting regulations. The project will identify leaks in water systems for future water-saving projects. The total project will cost \$321,527 with a *Water 2025* contribution of \$158,250.

Arizona

The Arizona Department of Water Resources will develop a Web-based reporting tool to collect water-use data from community water systems in rural Arizona; develop a database of supply-and-demand information; make data available via the Web; review system efficiency; and develop goals or benchmarks for water conservation in rural communities. The project will facilitate regional planning, promote conservation and enhance monitoring. The total project will cost \$438,700 with a *Water 2025* contribution of \$190,000.

Montana

The state of Montana will install flow-measurement equipment on thirteen diversions in the Milk River Project; develop a computer flow-simulation model for the Milk-St. Mary Rivers System; upgrade four streamflow gages on tributaries of the Milk River; and install an agrimet station and use satellite imagery to verify consumptive uses in Canada. The total project will cost \$188,999 with a *Water 2025* contribution of \$81,286.

New Mexico

The state of New Mexico will rehabilitate a USGS streamflow gage on the Pecos River to provide more accurate high streamflow measurements. The gage will help better measure water under high flow conditions. Accurate measurement of water delivered to Texas under the Pecos River Compact is critical to the state. The total project will cost \$146,660 with a *Water 2025* contribution of \$59,480.



Headgate automation – before and after



President Bush's Fiscal Year 2006 Budget Requests \$30 Million for Water 2025

President Bush requested \$30 million for Reclamation for *Water 2025* in FY 2006. With \$30 million, *Water 2025* will be a multifaceted, program that will consist of three components: (1) The *Water 2025* Challenge Grant Program, including grants to Western States; (2) System Optimization Reviews; and (3) the advancement of desalination technology and reduction of the high costs currently associated with desalination.

Through System Optimization Reviews, Reclamation will work with willing states, tribes, irrigation and water districts, and other local entities to assess the potential for water management improvements in a given basin or district. Like the Challenge Grants, funding for System Optimization Reviews will be allocated through a competitive process and will require a 50 percent non-Federal cost share.

System Optimization Reviews will result in recommendations and performance measures for efficiency and conservation projects that will have the greatest impact in improving water management, such as creating water banks, facilitating water transfers and modernizing canals. The recommendations for on-the-ground improvements or water markets identified in the Reviews could then be used by to apply for federal funds through the Challenge Grant Program. Additional credit may be given to Challenge Grant applicants that use the recommendations from the plans to apply for *Water 2025* funds.



Lake Powell, AZ



Collaboration, Removing Institutional Barriers and Increasing Interagency Cooperation *Cooperative Approaches To Resolving Conflict Collaboration*

In keeping with the spirit of Secretary Norton’s 4Cs – “Consultation, Communication and Cooperation, all in the service of Conservation” – *Water 2025* supports cooperative approaches to resolving conflicts over water in the West. Collaborative processes that are based on the recognition of the rights and interests of the stakeholders allow problem solving that will maximize opportunities for innovation and creativity. The *Water 2025* tools of Collaboration, Removing Institutional Barriers and Increasing Interagency Cooperation promote partnerships among stakeholders and coordination among federal agencies to more effectively focus federal dollars on critical water short areas.

Collaboration

Reclamation will continue to pursue opportunities for collaboration tied to demonstrable improvements in water supply will be pursued West-wide. The formation of partnerships and stakeholder involvement are key components of *Water 2025*. Applicants for Challenge Grants are given credit in the evaluation process if their proposals demonstrate collaboration by including non-Federal funding partners, or by demonstrating stakeholder support and involvement in the project.

For example, the Medford Irrigation District’s FY 2004 Challenge Grant project to replace an antiquated dirt canal with pipeline opening up three miles of historic steelhead trout habitat, involves collaboration between the District, the City of Medford, the Bear Creek Watershed Council and Reclamation. Likewise, the Central Oregon Irrigation District’s FY 2004 Challenge Grant project to establish a water bank in the Deschutes Basin involves an alliance of seven different irrigation districts, four municipalities, the Deschutes Resource Conservancy, the Paiute and Wasco Tribes, and Reclamation.



Old headgate structure before improvements



Old headgate structure after efficiency improvements



Removing Institutional Barriers

Sometimes improvements to the management of water in the West are met with barriers to success. Existing Federal laws and authorities can actually impede progress toward resolving conflict over water resources. *Water 2025* proposes researching and analyzing

current Federal policies, practices, and procedures to determine whether they might in fact impede the goals of implementing water conservation, efficiencies, and markets across the West, especially in areas of the West most prone to conflict and crises over water supplies.



Automated canal gate with telemetry in a check structure formerly operated with boards

The equipment maintains water level upstream to ensure constant canal diversions. Water levels and gate height are used to provide measurement and permit accurate flow monitoring. This allows system operators to maintain minimum flows in the natural channel reach below the structure. Located in 7-mile Slough near Payette, ID.

Automated headgate at the head of Noble Ditch, Payette Valley, ID

One of two original slide gates was automated to regulate diversions (top). Canal Company staff did most of the site work. Bottom photo shows measurement flume approximately 300 yards downstream of headgates, providing information to controller at headworks.



Increasing Interagency Cooperation

Interior agencies, in collaboration with Department of Agriculture, will continue to closely monitor any western basins experiencing drought conditions. Existing programs will continue to be coordinated with other federal agencies, such as the Army Corps of Engineers and Natural Resources Conservation Service (NRCS).



Wetlands habitat

U.S. Army Corps of Engineers

Reclamation and the Corps of Engineers entered into a Memorandum of Understanding that promotes a long-term collaborative effort to improve the management of water and related land resources under each agency's respective missions and authorities.

Department of Agriculture

The Departments of Agriculture (USDA) and Interior have worked together for decades to assist the residents of western States, both urban and rural. Reclamation and NRCS have had an active partnership for many years that promotes the idea of working together for the sustainable and efficient use of Western agricultural water supplies.

Reclamation and NRCS are coordinating their complementary programs, such as *Water 2025*, NRCS' *Environmental Quality Incentives Program (EQIP)* and the *Ground and Surface Water Conservation Program*. Where conflict over water supplies either exists today or can be predicted in the future, an extra effort will be made for inter-agency collaboration in order to prevent future water crises. Through *Water 2025* and coordination of these programs, we believe a much larger impact can be realized at the local level, where water crises are the most painful.

On July 21, 2005, Secretary Norton and Agriculture Secretary Mike Johanns activated Interagency Drought Action Teams to coordinate drought relief to communities in Western States that face the greatest potential water shortages this summer. The Teams

are working in conjunction with state governments to address drought conditions in Washington, Oregon, Idaho, Montana, and other states as needs are identified.

The Drought Action Team initiative stems from a June 2003 Memorandum of Understanding (MOU) between the Department's of the Interior and Agriculture as part of *Water 2025*. The MOU established an Interagency Drought Coordination Task Force, to identify areas with severe water supply problems that need immediate focused assistance and use the teams to mobilize appropriate federal resources to help communities and producers in need. Information on the Drought Action Teams and Memorandum of Understanding are available at <http://www.doi.gov/water2025>. Information on USDA relief to farmers, ranchers and local communities is available at <http://disaster.usda.gov>.

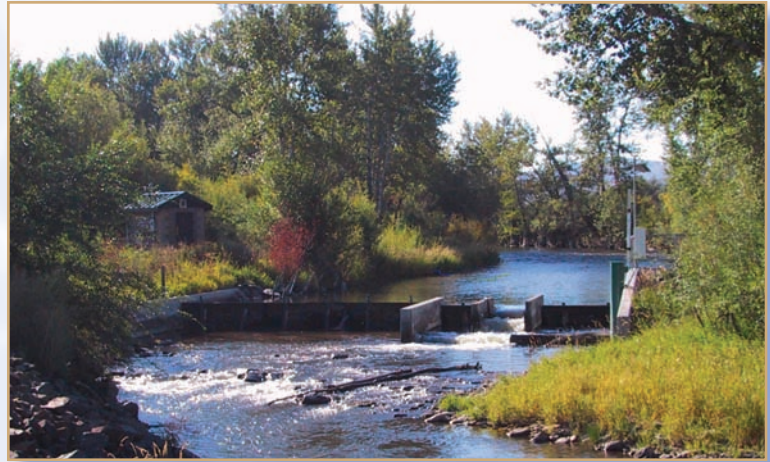
U.S. Geological Survey

USGS water activities that are highly relevant to the goals of *Water 2025* are Ground Water Modeling, Watershed and River System Management Program, National Streamflow Information Program, Real-Time Ground-Water Monitoring, and USGS contributions to the U.S. Drought Monitor. The Cooperative Water Program facilitates collaboration between the USGS and many State agencies and irrigation districts. Finally, the USGS has significantly increased its data collection and research regarding the hydrology and biology of the Upper Klamath Lake basin, in support of Reclamation, the State of Oregon, the Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and local tribes.



Conclusion

In conclusion, there is a Federal role in addressing water supply problems in the West. Reclamation is in the forefront of solving many of these problems by providing the necessary assistance to state and local entities. However, water supply issues will continue to create more conflict if communities and decision makers are not more proactive in addressing these crises. *Water 2025* will help prevent crises and conflict in the West.



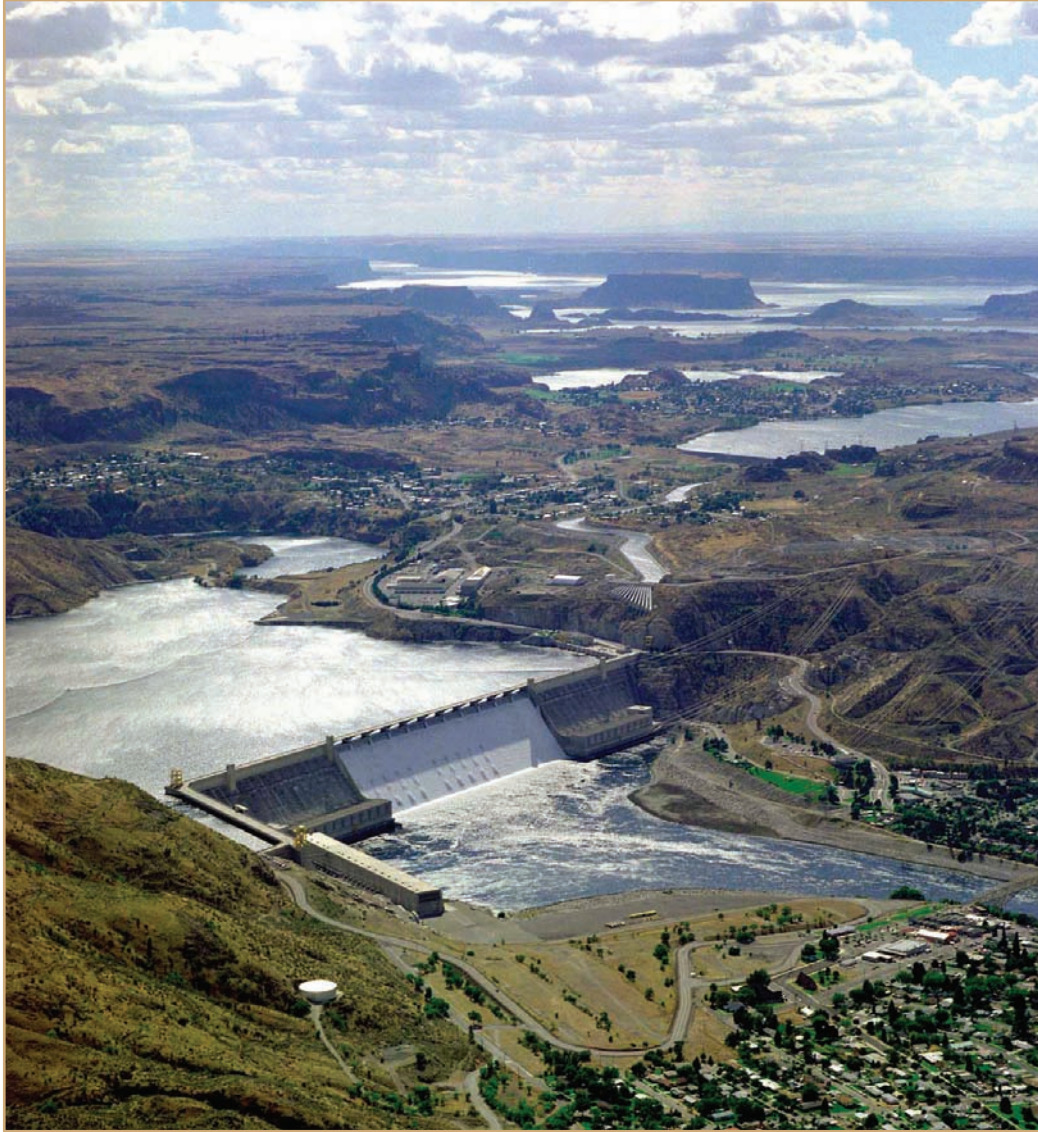
Fish ladder, ID



Sprinkler irrigation



Grand Canyon



Grand Coulee Dam. WA

<http://www.doi.gov/initiatives/water2025.html>