

## Managing for Excellence: Team 12 Effort Reveals Reclamation's Emerging Future

Few *Managing for Excellence* action items are better examples of how Reclamation is transforming its efficiency, transparency, and accountability than Team 12's Customer Collaboration and Business Model for Managing Engineering and Other Technical Resources

Originally directed to do a "right sizing" exercise related to engineering services, Team 12 quickly realized that it takes more than engineering to get a construction job done and that engineering and all interrelated technical services across Reclamation needed to be reviewed. Furthermore, Team 12 determined that Reclamation had a 106 year history of continuously right-sizing itself as projects, budgets, and needs changed. Finally, Team 12 also determined that the core capability of Reclamation needed to be better defined and protected.

Complicating the issue is a mandate from Congress that 40 percent of Reclamation's technical services work be contracted. The problem was a lack of clear direction or priority as to what work was contracted. Because of that, work considered as core expertise work has been contracted out while other work less related to Reclamation's core was done in house. For example, it made no sense

to contract core activities, such as dam safety and comprehensive facilities reviews, while doing other work outside of core capability.

The solution, approved by the Reclamation Leadership Team, is a several-pronged approach. First, technical services will be delivered on a consistent fee-for-service basis across all of Reclamation. This means statements of work, service agreements, and completion reports will enable a common efficiency review of all technical work to take place, thus delivering that work in the most effective and transparent way. As a result, advanced planning and scheduling of future workload will be improved. Guidance will be provided for workload distribution between all levels and offices of Reclamation.

Finally, to tie it all together, a Coordination and Oversight Group, called the COG, will support the Deputy Commissioner for Operations in reviewing workload distribution, performance, core capability, and outsourcing. Through the reporting of the COG, Reclamation and its customers will now have common data related to program accomplishments, costs, and accountability.

The initial COG has now been appointed, with first reporting results due in 2009.

*Continued from Page 1*

water rights settlement in U.S. history. The Act also provides funding and water to address other Tribal claims in Arizona.

We continue to work with partners on significant construction projects such as the Animas-La Plata Project, the Drop 2 Reservoir Storage project, and the Joint Federal Project at Folsom Dam, a collaboration with the U.S. Army Corps of Engineers and the State of California that improves flood control for Sacramento and addresses dam safety at a significant cost savings. The Rural Water program that we are implementing addresses supplying high quality water reliably to people in remote rural areas and the aging of infrastructure. In August, we celebrated the first delivery of water from the Mni Wiconi rural water project to the Oglala Sioux Indian Reservation.

We undertook the self-study that led to the *Managing for Excellence* action plan. When I came in as Commissioner, I made the implementation of *Managing for Excellence* a top priority. We have issued the concluding report and continue to implement the recommendations, which we developed with significant stakeholder input and which will better position us to meet the challenges of 21st century water resources management.

Most of the great successes we have produced took significant amounts of time. The Colorado River shortage criteria took 10 years. The QSA took at least 10 years. The MSCP took 10 years. The Arizona Settlements Act negotiations have been proceeding



Bob Johnson served as Lower Colorado Regional Director from 1995 until his appointment as Commissioner in 2006

more than 25 years. The Platte River agreement took 7 years. Strong leadership, strong relationships, and perseverance are at the foundation of our success.

We should feel great pride in looking back at these accomplishments and great energy looking ahead. We have surmounted many, many obstacles by working together, and I am confident that this success will continue well into the future.

I am proud to have served in an agency performing such vital services to the people of the United States and grateful for the opportunity to have worked with this group of dedicated public servants. The spirit and can-do attitude of the people in Reclamation is second to none. I am also grateful for the opportunity to have worked with Reclamation's partners and stakeholders. As you continue to work together in this spirit of service to the people of this nation our future will surely be as bright as our past.

# RECLAMATION

*Managing Water in the West*

Fall/Winter 2008

## ETA

Efficiency  
Transparency  
Accountability

### The Privilege of Service

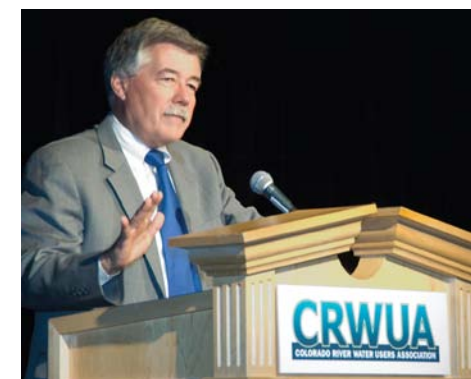
#### A Letter from Commissioner Bob Johnson

In January, I will conclude my 33-year career with the Bureau of Reclamation. During my career, water management has changed considerably, from constructing dams and water delivery facilities to a complex balancing of often-competing demands for water.

Because water is vital, eliminating problems is impossible; our success is reflected in how well we deal with the problems. Working in water resources management has taught us some important things. One is that developing solutions requires hard work and a lot of time. Another is that there is no universal solution for water problems—one size does not fit all. The most effective solutions usually employ a combination of tools. With ingenuity, we can sometimes satisfy a greater number of interests by creating a bigger pie.

Reclamation is one of the few government entities that works directly with customers, and strong relationships with customers and partners is vital to our success. As I look back at the formidable challenges we have met, I feel great pride in those who have worked at and those who have worked with Reclamation. We have accomplished a great deal together to stretch supplies and get water where we need it despite staggering population growth and record drought.

In order to continue our success, we are looking broadly at future water management challenges. A key part of this approach is the Department's *Water for America* initiative. Through a number of approaches, *Water for America* promotes conservation, technological advances, and



environmental enhancements through Challenge Grant programs. The initiative also includes a significant new effort focusing on water planning. Using a basin-wide approach, the planning program will focus on climate change and ways of meeting future water supply and demand imbalances.

Reclamation's river restoration activities are addressing the challenge of satisfying environmental requirements while providing certainty to water users well into the future. The Lower Colorado River Multi-Species Conservation Program looks ahead 50 years to protect endangered and threatened species and to keep other species from being listed. More than 50 parties signed the agreement. The Platte River Recovery Implementation Program Agreement was signed by the Governors of Colorado, Nebraska, and Wyoming and the Secretary of the Interior, ending 12 years of negotiations. In two other river basins facing extremely complex issues, we are helping to balance water user and environmental needs through the Klamath Conservation Implementation Program and the Middle Rio Grande Endangered Species Act Collaborative Program.

Questions about dam operations and effects on downstream resources require long-term investment in scientific study. A recent example of this type of work was

the high-flow experiment at Glen Canyon Dam, which will increase our understanding of whether higher flows can rebuild eroded beaches. Other research is fostering innovative solutions to water supply challenges, such as desalination and the control of invasive species.

We have made tremendous progress in the management of resources in a number of river basins. In the Colorado River basin, we have reached agreements on surplus, the quantification of water entitlements in California – the QSA. Most recently, we have reached a historic milestone in the management of the Colorado River system with the new guidelines to address potential shortages in the Lower Colorado River Basin and operation of Lakes Powell and Mead under a wide range of hydrologic conditions. The signing of the Truckee River Operating Agreement on management of water in the Truckee River basin by Secretary Kempthorne and 16 other parties ended 18 years of negotiations among numerous Federal and non-Federal entities.

We have made progress on satisfying Tribal water rights claims, including the Arizona Water Settlements Act, which resulted in the largest Native American

*Continued on Page 8*

### IN THIS ISSUE

|                               |   |
|-------------------------------|---|
| Desalting Research .....      | 2 |
| Leadership Development.....   | 2 |
| International Visitors .....  | 3 |
| Deterring Quagga Mussels....  | 3 |
| Animas-La Plata Project.....  | 4 |
| Denver's "Building 56" .....  | 6 |
| Faces of Reclamation.....     | 7 |
| Managing for Excellence ..... | 8 |

|   |  |  |
|---|--|--|
| <b>News Team</b>  |  |  |
| <b>Executive Editor</b><br>Dan DuBray, Office of Public Affairs, Commissioner's Office  | <b>Contributors</b><br>Stanley Dambroski, Office of Public Affairs, Commissioner's Office<br>Warren Hurley, Upper Colorado Region<br>Norma Martinez, Human Resources, Commissioner's Office<br>Angela Medina, International Affairs, Commissioner's Office<br>Christine Pfaff, Policy and Program Services, Commissioner's Office<br>John Redding, Pacific Northwest Region<br>Jack Simes, Lower Colorado Region<br>Allen Skaja, Technical Service Center, Commissioner's Office<br>Barry Wirth, Upper Colorado Region | <b>Photographers</b><br>Walter Justus<br>Andy Permick<br>David Walsh |
| <b>Managing Editor</b><br>Peter Soeth, Office of Public Affairs, Commissioner's Office  | <b>Editorial Board Members</b><br>Rick Ehat - Four Corners Area Office<br>Lorri Gray - Lower Colorado Regional Director<br>Fred Ore - Special Asst. Deputy Commissioner PAB  |  |
| <b>Assignment Editor</b><br>Becky Fulkerson, Office of External and Intergovernmental Affairs, Commissioner's Office  |  |  |
| <b>Editorial Assistants</b><br>Gertel Harris-Brace, Office of Public Affairs, Commissioner's Office<br>Kip White, Office of Public Affairs, Commissioner's Office |  |  |

To submit an item or story idea for a future issue, please email: [eta@usbr.gov](mailto:eta@usbr.gov)



U.S. Department of the Interior  
Bureau of Reclamation  
Washington, D.C.

## Reclamation's Desalting Research in Yuma, Arizona

The Bureau of Reclamation delivers water to more than 20 million people in the lower Colorado River basin through a series of dams and water distribution systems. This water grows our nation's crops, supplies cities and rural communities, serves industries, and provides recreational opportunities. Presently, the Basin is in the midst of a prolonged drought that affects both water quantity and water quality, so Reclamation is exploring solutions to help make additional water supplies available for its customers throughout the Southwest.

Water quality is essential to water availability - water that is high in minerals, or has been impaired by industrial or municipal use, could be re-used and made available for potable purposes if extensively treated. In turn, these "recycled" water resources could increase the overall available water supply. But treatment of low quality water is expensive, and in many areas, this is not economical.

That's where water treatment research comes in. Research develops cost-effective technologies and methods to economically improve water quality. For more than 10 years, Reclamation's Water Quality

Water Quality Improvement Center, Yuma, AZ



Improvement Center in Yuma, Arizona, has been working to identify processes and technologies to help reduce the cost of operating the Yuma Desalting Plant (a 73 million-gallon-per-day reverse osmosis desalting plant) and to develop emerging advanced water treatment technologies that may reduce costs of treating impaired water sources.

The Center is a 14,000-square-foot building which houses membrane water treatment research equipment. It is one of only two Reclamation-operated applied research facilities searching for desalination solutions. Its research is valuable

outside Reclamation because results can be applied at other reverse-osmosis desalination plants in the United States and around the world. Technology developed through the Center's research is also used to treat agricultural drainage for return or reuse. These new technologies and methods also provide Reclamation with more options to manage groundwater and meet salinity obligations for water deliveries to Mexico.

For more information regarding the Water Quality Improvement Center, visit: [www.usbr.gov/lc/yuma/facilities/wqic/yao\\_facilities\\_wqic.html](http://www.usbr.gov/lc/yuma/facilities/wqic/yao_facilities_wqic.html)

## Employees Complete Requirements of Reclamation Leadership Development Program

Nine Bureau of Reclamation employees recently completed the requirements of the Reclamation Leadership Program.

The final learning event was held on September 9 and 10 in Durango, Colo., where the participants heard from Western Colorado Area Manager Carol DeAngelis and Rick Ehat, Animas - La Plata Construction Engineer who shared the lessons learned of the Project. Participants also toured the Project.

This final meeting caps a training and development process where participants completed training sessions, an action learning project, details, and executive interviews adding to their knowledge base so they can become leaders in Reclamation.

"The Reclamation Leadership Develop-



The program provides hands-on experiences for Reclamation leadership candidates.

ment Program is a valuable program and opportunity for Reclamation to develop leaders with the skills and experience to perform well in various positions across Reclamation," said participant Ella Mae Herrera. "As a participant, I am thankful for the opportunity and encourage partici-

pation and support at all levels."

The Program was designed to build leadership capacity and to assure that a cadre of leaders exists to fill key senior leadership positions in the future.

"My self awareness on leadership competency strengths and weaknesses is much higher now. It is my plan to parlay this knowledge with the competency training to be more effective on the job," added participant Tom Sawatzke.

Those completing the program are Sue Fry from the Mid-Pacific Region; Chris Beardsley from the Washington Office; Joe Lyons, Mike Horn, Ella Mae Herrera, and Yvonne Vigil from the Denver Office; Rick Strahan and Tom Sawatzke from the Great Plains Region; and Kevin Reynolds from the Upper Colorado Region.

## Faces of Reclamation

Every day, those who work at Reclamation dedicate themselves to bringing water and power to the people of the West. We see their commitment to their work but it can be fascinating to look behind the scenes - to get a glimpse into their achievements and interests. This section of ETA will give you that glimpse and introduce you to some of the faces of Reclamation.

**TENEAL JENSEN** describes herself as "fishaholic" who enjoys casting a line into many of Idaho's streams and lakes. But when she isn't on the banks of a river trying to hook a fish, she is the Snake River Area Office's primary point of contact on Native American affairs.

**PERRY HILL** is someone who keeps a watchful eye on finances in the Pacific Northwest (PN) Region. That is just as important to being a good steward of public resources as ensuring that our water resources are available, clean, and reliable. A veteran of the Air Force and Idaho National Guard, Perry may be one of the newest employees in the PN Finance Division, but he has the dedicated spirit of someone with decades of experience.

**LEONARD WILLETT**'s varied duties include the safe handling of wastewater at Hoover, Davis, and Parker Dams. However, he is now famously known as leading the Lower Colorado Region's comprehensive efforts to address and manage quagga mussel threats to Lower Colorado Region facilities.

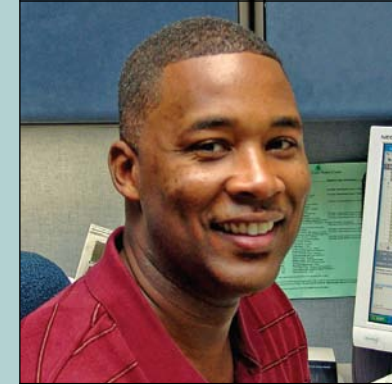
**FRED NIBLING** has been occupied with finding ways to manage invasive species in Reclamation water systems since 1977. During this period, his research interests have focused on the control of such invaders as hydrilla, saltcedar, giant salvinia, waterhyacinth, purple loosestrife, and now quagga and zebra mussels.

**YULIANA E. PORRAS** joined Reclamation's Technical Service Center in October 2001, as a Chemical Engineer Trainee in the Student Career Experience Program. She then joined Reclamation full time in January 2004, as a Chemical Engineer with the Water Treatment Engineering and Research Group. Yuliana is currently working on reverse osmosis membrane research to produce an improved membrane for water treatment and desalination.



"I look forward to working with everyone in Idaho, this office radiates positive energy and I am so excited to be a part of the Snake River team,"

Teneal Jensen, Native American Affairs and Project Coordinator  
PN Region



"From the standpoint of someone who is new to Reclamation, I can say that I feel positive about a career here. Aside from understanding the technical language associated with the job, I do have the opportunity to explore what Reclamation does in the field."

Perry Hill, Project Accountant



"It has been an honor to be involved in such an important environmental issue relating to controlling invasive species (quagga mussel) on Lake Mead and the Colorado River," Willett said. "The challenge is to come up with solutions to prevent mussel colonization (blockage) of our facilities in a way that does not adversely effect the environment."

Leonard Willett



"My most rewarding career experiences have been spent working jointly with Reclamation scientists and engineers and our water users in finding solutions to the biological problems which hamper the job of providing a reliable supply of water. I am repeatedly impressed by the professionalism, talents, and accomplishments of these combined segments of our society."

Fred Nibling



"I enjoy my work with Reclamation, it is great to be working in the area of water treatment and to have the capability to do not only Engineering work but also Research. My experience in this area has helped me become a better Chemical Engineer and I thank my Mentor, Andy Murphy, for I would not have gained that knowledge without his guidance."

Yuliana Porras

## Denver Federal Center's Building 56: Home to Reclamation's Innovation

The towering Building 67 on the Denver Federal Center campus is unmistakable for miles around and serves as a symbol of Reclamation's engineering dominance but its low-profile companion – Building 56 – has served an equal, if not more important role in Reclamation's history. In fact, Reclamation's occupancy of the sprawling brick building preceded the addition of the modern concrete and glass tower by about 20 years.

First occupied by Reclamation after World War II, Building 56 consolidated Reclamation's hydraulic laboratories at one location. The new facility solved the need for more space and allowed for the expansion of applied research using working scale models.

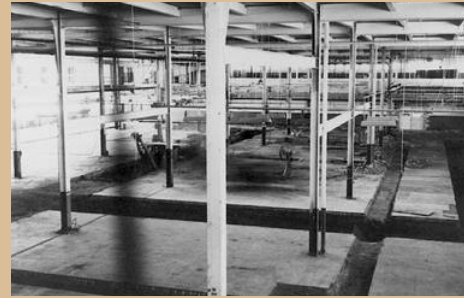


Hydraulic models have been part of scientific research at the Denver facility throughout its history.

Reclamation began using hydraulic models in 1930 to study problems encountered in the design and construction of engineering structures. The unprecedented scale of Hoover, Shasta, and Grand Coulee Dams made the establishment of a hydraulic laboratory necessary to evaluate various aspects of the new designs. Models could be tested under various conditions until sufficient information was obtained to establish the most favorable design.

The 53,000 square feet of hydraulic laboratory floor space in Building 56 was soon teeming with models to assess the adequacy and safety of the massive designs taking shape on Reclamation drafting boards. Large chambers built beneath the floor of the laboratory stored water that was circulated through pipes to the various working models.

Among them were spillways, reservoir



Reclamation's laboratory was created in a WWII-era arms factory. Large chambers were carved out of its floor to store water needed for hydraulic models.

outlet works, conduits, open channels, canal structures, and fishways. Other laboratories in Building 56 were also engaged in developing new technologies and design solutions for Reclamation's massive dam projects.

In July 1950, Reclamation dedicated the Reclamation Engineering Center at the Federal Center. In a press release dated May 5, 1950, announcing the upcoming event, the design and laboratory facilities were described as the "water engineering capital of the world."

The immediate occasion for the dedication was the unveiling of the 5-million-pound capacity testing machine in Building 56. Weighing 750,000 pounds and requiring a year to install, the state-of-the-art machine was touted as symbolic of the tools of science needed to reclaim land and water. The massive piece of equipment, used to test the strength of large concrete specimens and the tension of steel, was capable of crushing concrete to powder, or pulling steel bars apart.

Over a three-day period in late July 1950, an estimated 40,000 to 45,000 people attended the Reclamation Engineering Center open house and viewed about 300 exhibits and many special demonstrations.

The combined talents and expertise of engineers, geologists, chemists, soil scientists, and others were applied to the complex issues of water development in the arid west.

Today, Building 56 is still the site of Reclamation's only hydraulic laboratory and home to the materials laboratory and 5-million-pound testing machine. A recent refurbishing of the machine included the addition of a computer control system. The unique capabilities of the machine have expanded its use beyond concrete and steel

testing to assessing the strength of features such as mine cribbing and piping.

As times have changed, the focus of research in the hydraulic laboratory has also shifted to address current water-related challenges. Sophisticated model studies and the use of contemporary data acquisition and evaluation instruments have maintained the laboratory's state-of-the-art status.

Much of the present work is in environmental hydraulics to develop and assess fish passage and fish protection equipment at dams and other man-made water control features. A unique facility in the hydraulics laboratory is the automated canal model used to develop new methods, and provide training on flow measurement and modern canal operation techniques.

Most recently, the hydraulics laboratory built a model of Folsom Dam to test the new auxiliary spillway. To date, this is the largest model ever built in the laboratory and has provided necessary information for the design that a computer model can't do and not having to make expensive changes once construction is underway or complete.



In May, Commissioner Bob Johnson hosted Norm Semanko of the Idaho Water Users Association, along with other stakeholders and agency partners, in a tour Building 56 operations, including a hydraulic model of Folsom Dam.

Innovative research conducted by the various groups located in Building 56 extends beyond hydraulics and concrete construction to other related subjects. These include dam safety, hydroelectric power, the properties and performance of materials used in Reclamation structures under various conditions, water and wastewater treatment, water quality, desalination and protection of aquatic ecosystems.

This laboratory is essential to Reclamation being the world leader in engineering innovation to support its mission of delivering water and generating power.

## Reclamation Researcher Working to Identify Coatings that Deter Quagga Mussels

Quagga and zebra mussels are being found in more and more reservoirs in the western United States. Recent infestations are already affecting some facilities and will likely impact more facilities as infestations spread.

Reclamation has undertaken numerous research projects to help monitor, contain, control, and manage the effects of mussels settling on dams, pipelines, grates, canals and other infrastructure. One such research project, conducted by Dr. Allen Skaja of the Technical Service Center, is evaluating different coatings for their effectiveness to either deter attachment of quagga mussels or allow mussels to be easily cleaned from hydraulic structures and equipment.

"The plates and grates were installed in late May," said Skaja. "We will continue testing the coating products until the panels have heavy growth of mussels or we determine the testing is complete."

In the early 1990's, the U.S. Army Corps of Engineers found that copper and zinc did the best to repel mussels. But due to the toxicity of copper, the Corps has been using zinc rich coatings, metalizing, and galvanizing for their infrastructure.

"The results of this research will show which coatings or materials prevent or reduce fouling and if fouled, will allow for easy removal," added Skaja.

While this research project may take up to two years, Reclamation will make interim findings available throughout the process.

To learn more about this and other research projects please visit Reclamation's Mussel website at

[www.usbr.gov/mussels](http://www.usbr.gov/mussels).



Rapidly reproducing quagga and zebra mussels are a tiny, yet potentially debilitating threat to water infrastructure. [Courtesy: CA Dept. of Fish & Game]

## Reclamation's International Affairs Office Hosts Seminars and Tours with Visitors from around the world

Reclamation's International Affairs Program routinely assists water resource agencies from other countries through technical training and visitor programs.

These training programs are tailored to fit each request and vary in length from two days to a full year. Programs combine office assignments, field visits and/or study tours to various Reclamation offices and facilities, with costs fully reimbursed to Reclamation.

This fall, Reclamation has hosted three events in the western United States.

### Safety Evaluation and Visual Inspection of Existing Dams

From September 16 to 25, the International Affairs Office in Denver hosted 43 participants from 23 countries.

The seminar was designed for managers, administrators, engineers, and geologists responsible for the design, construction, operation, maintenance, and safety of dams.

The first week of the seminar took place in Denver with classroom presentations, discussions, and a tour of Reclamation's Research Laboratories at the Denver Federal Center.

The following week, the study tour took participants to Utah, Idaho, and Nevada, visiting A.V. Watkins Dam, American Falls Dam, and the Teton Dam site. The tour ended in Las Vegas, where participants enjoyed a special tour of Hoover Dam.

### Assisting the people of Tanzania

From September 29 to October 3, International Affairs hosted three visitors from the Ministry of Water and Irrigation, United Republic of Tanzania. Following the earlier Safety Evaluation and Visual Inspection of Existing Dams International Technical Seminar and Study Tour, the group added an additional week of training in Denver. The delegation met with Brian Becker and the Dam Safety Office staff, DeW-



The Nile Basin Delegation received an up-close view of the Colorado water system.

ayne Campbell and the Instrumentation and Inspections Group staff, toured the Technical Service Center, and concluded with a site visit to Pueblo Dam and the operation center of the Colorado State Office of Emergency Management.

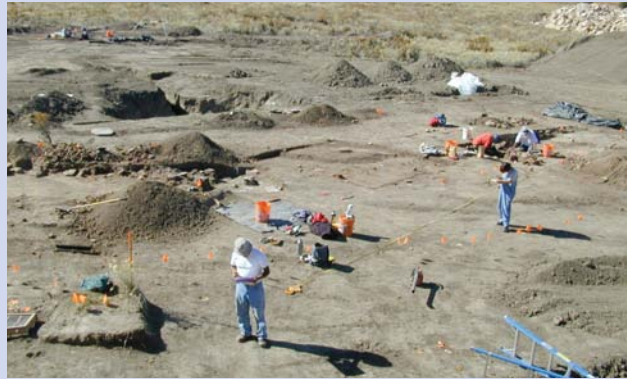
### Nile Basin Initiative

From October 21 to 28, the Denver International Affairs Office hosted a delegation from the Nile Basin Countries, including representatives from Burundi, the Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. The group studied the Colorado water system and its multi-state compact.

As part of the Nile Basin Initiative, this delegation is seeking to provide a common, basin-wide platform for communication, information management, and analysis of Nile basin water resources.

The delegation met with Reclamation staff and representatives of the Center for Advanced Decision Support for Water and Environmental Systems at the University of Colorado, as well as technical professionals from the State of Colorado.

The visit included a three-day study tour, with visits to the Division of Water Resources, Denver Water and Chatfield Reservoir. The tour ended in the Lower Colorado Region with a special visit to Hoover Dam.



Field crews conducting excavations in Ridges Basin



Pueblo I Pit House from Ridges Basin



Removing a dendrochronological (tree ring) sample from a pit house

## Animas-La Plata Project Advances the Archaeological Record of the West

Construction project yields unexpected results in prehistory

A seven year archaeological project in support of the Animas – La Plata Project (ALP) outside of Durango, Colorado has resulted in a rewriting of the prehistory of the Four Corners Region.

The ALP Archaeological Project occurs in the locale of Ridges Basin Dam and Lake Nighthorse. Since 2002, Reclamation has conducted data recovery to address impacts from construction and reservoir development. More than 74 sites have been investigated in accordance with a rigid scientific sampling strategy. The work in the project area concentrates on pit house villages dating to the early Pueblo I time period (750 to 850 A.D.) of the Ancient Pueblo (Anasazi) occupation. These sites are much earlier, and precursor to, the famous cliff dwellings found at nearby Mesa Verde (which date to the 1200s). The Ridges Basin people were among the earliest farmers in the northern Southwest, and among the first to settle in villages.

Investigators, led by Dr. James Potter of SWCA Environmental Consultants employ a multistage process utilizing cutting-edge techniques to address the various questions posed by the project's findings. The process involves:

1. Fieldwork: Excavation of pit houses, surface rooms, and midden (trash) areas using horizontal and vertical control using electronic data storage (Total Station and GPS) instrumentation. Recovery included collection and field conservation of artifacts and other materials.
2. Analysis of materials: basic and specialized analyses, including chronometry (dating), ceramics, stone tools, faunal (animal) remains, human remains, geomorphology, and plant and soil samples.

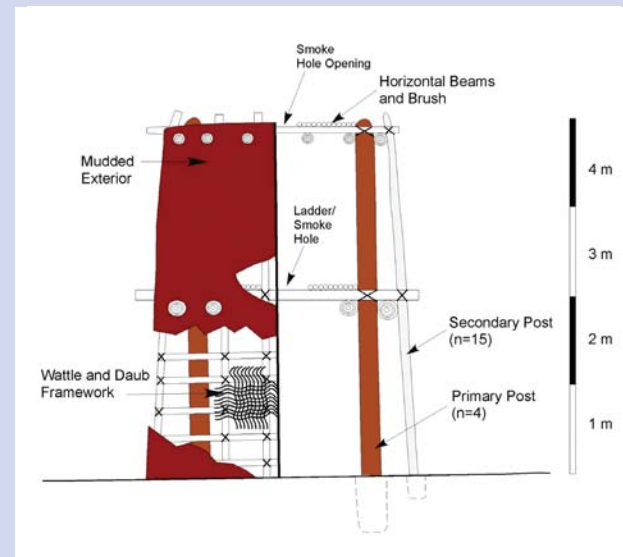
Specific, remarkable, findings include the earliest cultural feature, a fire pit, ever discovered in the Durango area (12,000 years old). A second was the discovery that this is not the first time an impoundment existed at the site of Lake Nighthorse. During the Pueblo I occupation, a natural lake or marsh existed in the same area. A third is the discovery of the foundation of a tower structure on Sacred Ridge, in the center of Ridges Basin. This is the earliest evidence of a tower structure in the Southwest.

What is probably the most remarkable is the brief but intense occupation of Ridges Basin. Ridges Basin, at its peak at about 800 A.D. was home to hundreds of people living in pit house villages. However, more precise analysis indicates the area was occupied for less than 100 years. This provides an ideal case study for examining how and why communities form and eventually disintegrate. As such, the ALP Archaeological Project plays not only a significant role in the development of the cultural history of the region, but of the understanding of early village formation and decline from a global perspective.

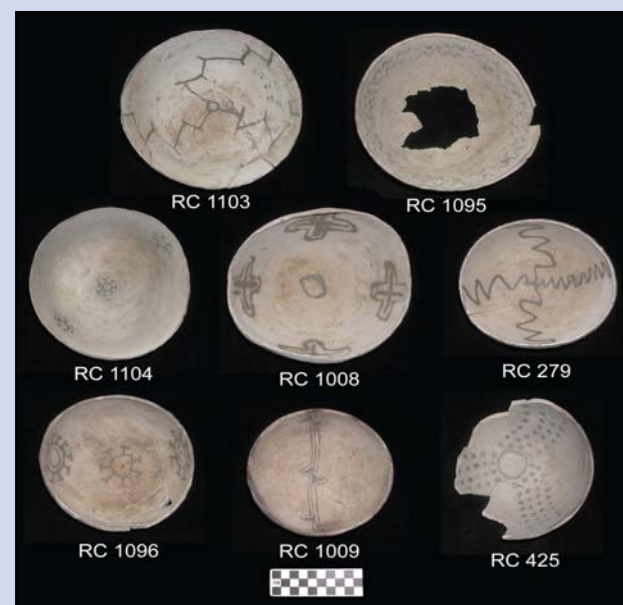
For more information visit:  
[www.usbr.gov/uc/progact/animas/](http://www.usbr.gov/uc/progact/animas/)



The Lake Nighthorse Reservoir is scheduled to start filling in Spring 2009.



Probable construction of Pueblo I tower structure in Ridges Basin



Ceramic artifacts recovered from Ridges Basin

## NAGPRA: A Complex Process at Work on ALP

Prior to recovery work beginning, Reclamation consulted with 23 Indian Tribes concerning the proper treatment of human remains and grave goods that may be disturbed by the project. As a result, a Native American Graves Protection and Repatriation Act (NAGPRA) Plan was developed. A flow chart displaying the complexity of the Plan process is shown below.

Under this NAGPRA Plan, Reclamation has recovered more than 300 sets of Pueblo I human remains, has completed a Cultural Affiliation Study, and is facilitating the transfer of the human remains and associated cultural items to the affiliated Tribe (Pueblo of Acoma). Over 125 have been transferred, with the remainder to be transferred by 2010.

