



# River REPORT

Winter 2009-2010

*A project of the Water Education Foundation*

## Balancing the Colorado River's Ecosystem and Water Delivery Capability

*By Gary Pitzer*

The Colorado River has many uses – water supply, power generation and recreational opportunities. At the same time, a renewed emphasis on endangered species, Indian water rights settlements and ecological restoration has created an era of investment that has increased the challenge of reconciling these many competing demands.

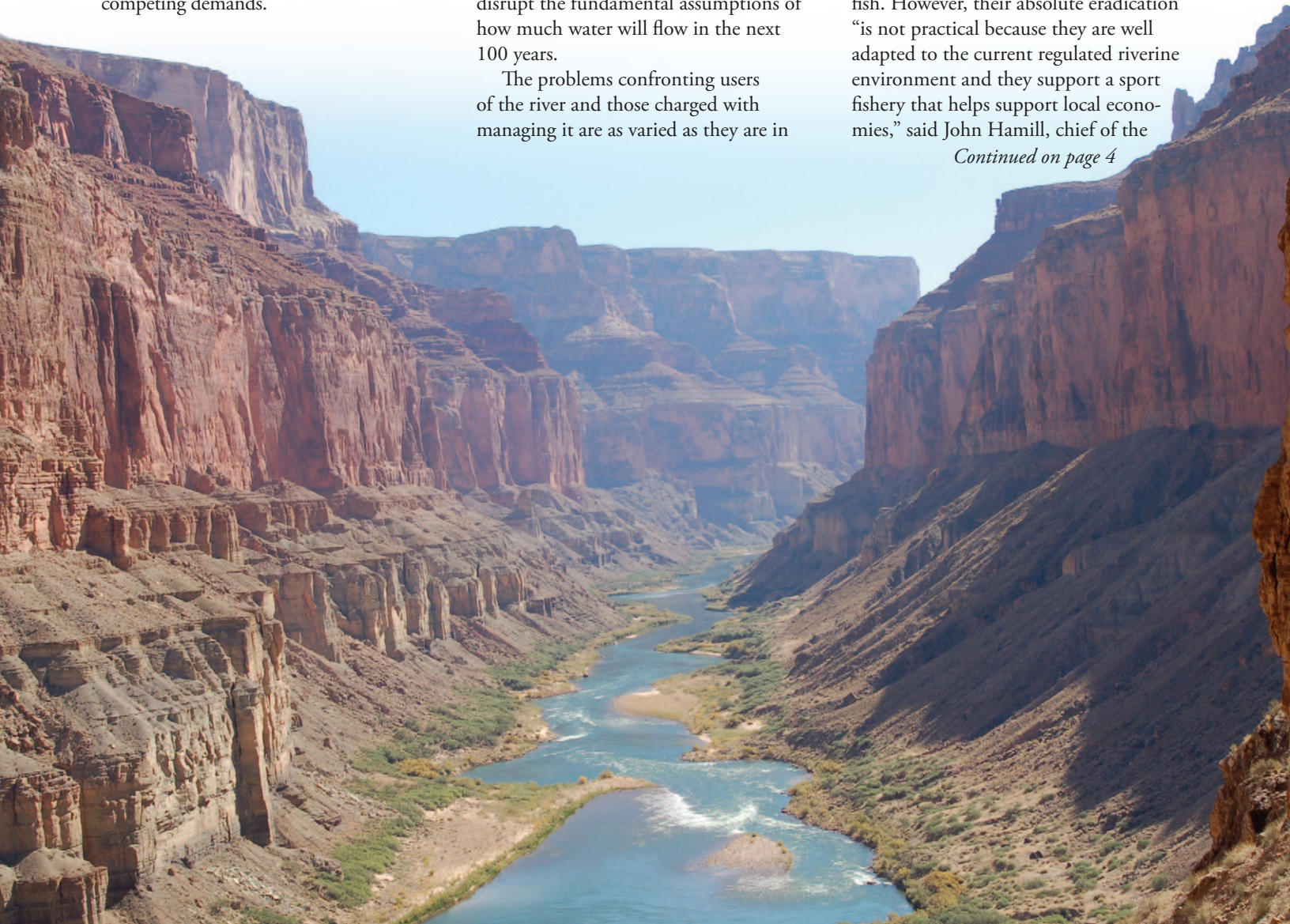
The attention devoted to reaching a critical balance of water supply reliability and ecosystem health has involved a small army of scientific, legal and policy experts – all intently focused on a river system that is caught in a set of ongoing environmental issues as well as predicted changes in precipitation that look to disrupt the fundamental assumptions of how much water will flow in the next 100 years.

The problems confronting users of the river and those charged with managing it are as varied as they are in

some cases perplexing. Invasive species such as salt cedar have taken up permanent residence. But even as it robs the ecosystem of moisture and habitat for native vegetation, salt cedar does provide sanctuary for some birds and wildlife.

Non-native fish species are problematic because of their predation on native fish. However, their absolute eradication “is not practical because they are well adapted to the current regulated riverine environment and they support a sport fishery that helps support local economies,” said John Hamill, chief of the

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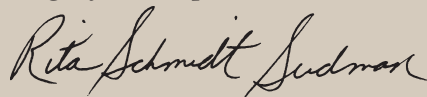


## Dear Readers

Since our first Colorado River Symposium in 1997, this biennial, invitation-only event has reflected the times on the river – marked in some years by tension among stakeholders and discussions between interests in other years. We believe our symposia have played a role in some of the landmark river agreements reached over the last 12 years because we have brought people together on the dais and in private negotiations to share ideas on how to manage the river's energy production, irrigation supplies and drinking water.

We held our most-recent symposium in September at the Bishop's Lodge in Santa Fe – site of the 1922 compact negotiations. Panelists at the event, "The Colorado River: Building a Sustainable Future," spoke at length about the "relative peace" we now have on the river in the wake of the 2007 Record of Decision, and how this time should be used to tackle some of the 21st century issues facing us: preparing for climate change, managing the river for both water supplies and environmental protection, and reaching agreement with Mexico on transboundary issues. The recorded discussions on environmental issues helped Writer Gary Pitzer prepare this issue of River Report.

What will happen to ongoing discussions over such issues in the wake of the recent tentative court ruling over California's Quantification Settlement Agreement (see page 10) remains to be seen. But one thing I do know is this: the Foundation will continue its commitment to learning about the many issues and diverse viewpoints in the Basin and bring you information and analysis of these issues through our Colorado River Project, which includes River Report, our Lower Colorado River Tour and, of course, Western Water magazine. We look to you to provide us with your knowledge of these topics and thank you for your support.



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*River Report* is a project of the  
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The Water Education Foundation thanks all the sources and experts who reviewed this newsletter for balance and accuracy.

The mission of the Water Education Foundation, an impartial, nonprofit organization, is to create a better understanding of water resources and foster public understanding and resolution of water resource issues through facilitation, education and outreach.

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# Basin Briefs

## Upper Basin

### Glen Canyon Dam Aces Check-Up By Reclamation

A recent inspection of Glen Canyon Dam by the U.S. Bureau of Reclamation (Reclamation) revealed the 43-year-old structure can remain “a reliable keystone” of Colorado River storage, the agency said.

Following a survey of different parts of the dam by divers the week of Nov. 16, Reclamation said trashracks were “not only in terrific condition but also completely mussel-free,” a reference to the invasive quagga mussel that has been found in Lake Mead, Lake Mohave and Lake Havasu. The first day of inspections took place in the reservoir side of the dam and primarily focused on the intake structures.

An examination of the spillways was carried out because “the overall condition and integrity of the tunnels were of particular interest so as to reaffirm their past repairs and continued functionality,” Reclamation said. The spillways conveyed incredible amounts of water in 1983 – the wettest year on record since the construction of the dam. Spring and summer inflows to Lake Powell were more than 100,000 cubic feet per second (cfs) at times. Because outflow could not match the magnitude of inflow, both spillways ended up releasing combined rates ranging from 20,000 to 50,000 cfs.

The high flow caused “significant erosion” of concrete and even some sandstone, requiring major repairs and tunnel modifications in 1984.

“The spillway tunnels structural soundness proved to have remained at a quality level, and overall condition was good, considering the inherent debris and water leakage,” according to Reclamation. “The true functional test of actual spillway operation will only come when water and inflow levels necessitate it, but at least this inspection confirms Glen Canyon Dam is prepared as well as it can be for that day’s arrival.” •

## Lower Basin

### Mead Water Levels Hinge on Hoped-for Surplus in Lake Powell

Water levels in Lake Mead, which have dropped precipitously the past decade, could improve or worsen depending on whether the U.S. Bureau of Reclamation (Reclamation) determines if surplus quantities are present in Lake Powell.

As a result, by December 2010, Lake Mead could rise by about 16 feet or drop to a level not seen since 1937. The latest

two-year projection by Reclamation assumes that Lake Powell will be able to release about 2.4 million acre-feet more water downstream than usual. The largest constructed reservoir in the United States, Lake Mead can store approximately 26 million acre-feet of water.

If Lake Powell doesn’t reach what is called the “equalization mark,” Lake Mead

will get 8.23 million acre-feet next year, about 770,000 acre-feet less than what Nevada, Arizona, California and Mexico annually receive. According to reports, there is about a 50 percent chance of that occurring. The Las Vegas Valley receives about 90 percent of its drinking water from the lake, and work is underway to complete a third intake at a cost of \$700 million. •

### Groundwater Pumping Plan Tripped Up By Legal Ruling

The Southern Nevada Water Authority (SNWA) and the Nevada Division of Natural Resources are challenging to the Nevada Supreme Court a lower court ruling that faulted plans to pump water to Las Vegas from a proposed pipeline across eastern Nevada.

In an Oct. 15 ruling, Nevada District Court Judge Norman Robison wrote that a 2008 order by State Engineer Tracy Taylor that would have cleared the way to bring as much as 6 billion gallons of groundwater annually to Las Vegas from rural parts of the state was an abuse of Taylor’s discretion and that he further-

more “acted arbitrarily, capriciously and oppressively.”

Las Vegas for 20 years has been planning to pipe groundwater to augment its static water supply, aiming for completion of an approximately 300-mile pipeline by 2019 if Lake Mead levels warrant initiation of construction. Because the project is designed as a resource alternative if drought worsens, there is not a specific completion year, according to the SNWA. Instead, the goal is to complete all necessary permitting so the project is “shovel-ready” should Colorado River conditions warrant.

Opponents of the pipeline are concerned about the potential impacts on the aquifer. In July 2008, Taylor granted SNWA less than half of the water it was seeking while ordering it to develop a monitoring and mitigation program and to collect data for at least two years before exporting any water from the area.

According to Robison’s ruling, while the state usually requires “specific empirical data” before allowing groundwater to be transferred out of a basin, Taylor was “simply hoping for the best while committing to undo his decision if the worst occurs.” •

## FEATURE

*Continued from front page*

U.S. Geological Survey's Grand Canyon Monitoring and Research Center.

A legacy of industrial activity has left costly cleanups such as uranium tailings that threaten water quality. Ongoing matters include the indeterminate impacts on water quality from emerging contaminants such as pharmaceuticals, the status of the Yuma Desalting Plant and how officials pursue multi-species restoration.

While that ensues, officials are looking to chart a course that includes as much current science as possible to understand climate change and what it means for the lifeblood of the Southwest. In September, the Department of the Interior announced its plans to address the impacts of climate change on natural resources, including water. Shortly thereafter the U.S. Bureau of Reclamation (Reclamation) unveiled its plans for a Basin water supply and demand study for the Colorado River.

The study includes "state of the art" projections of future water supply and demand, an assessment of climate change impacts, how existing water and power

operations will perform with "changing water realities," and how to best meet water supply needs while accommodating the environment, Reclamation said in a Sept. 18 release.

That same day, a panel of speakers addressed the subject of "Balancing the Colorado River's Ecosystem and Water Delivery System" at the Water Education Foundation's biennial Colorado River Symposium in Santa Fe, N.M. Representing environmental and federal agency viewpoints, the panelists underscored the Basin's shifting status quo and the need to address the new paradigm in a coordinated fashion.

"The lesson is the status quo is unstable," said Peter Culp, a Phoenix attorney who works on environmental, natural resource and water issues, including the Yuma Desalting Plant. "For environmentalists there is not a lot of point in preserving the status quo if it doesn't lead to a healthy river. And for water users there is very little point in fighting to preserve the status quo if that won't help us face the future together."

Evaluating the effects of river management on the natural environment is the focus of four major science-based conservation programs developed to address

endangered Colorado River native fish and other species – the Upper Colorado River Endangered Fish Recovery Program, which began in 1988, the San Juan River Basin Recovery Implementation Program, which began in 1992, the Glen Canyon Dam Adaptive Management Program, which began in 1996 and the Lower Colorado River Multi-Species Conservation Program, which began in 2005.

"Today, these conservation efforts span the entire length of the Colorado River Basin and involve scores of state and local and federal agencies, Native American tribes, diverse stakeholder interests and have had, I think, an increasingly important influence on both water management and conservation in the Colorado River basins," Hamill said. He noted the programs "have many commonalities including similar and overlapping goals and objectives," but that "until very recently there had been no formal opportunity for information exchange."

With that as an impetus, stakeholders met in Scottsdale, Ariz. in November 2008 for a three-day Colorado River Basin Science and Resource Management Symposium, which emphasized coordination of activities linked to restoration of the river ecosystem.

Attendees were unified by their involvement in collective efforts throughout the Basin to address native fish recovery, a process that includes land acquisition, flow releases from reservoirs that are more in sync with natural variability, high-flow experiments from Glen Canyon Dam into Grand Canyon National Park, non-native fish management, extensive hatchery operations designed to reintroduce or bolster native fish adversely impacted by the river's development and research and monitoring.

"Populations of native fish have responded variably to this extensive sweep of recovery actions that have been implemented throughout the Basin, although none has achieved any of the recovery goals that have been established," Hamill said, summarizing key points given at the 2008 symposium.



*Participants on the environmental issues panel at the Colorado River Symposium, L to R, Peter Culp, Squire Sanders & Dempsey; Jay Rhodes, Hunton & Williams; Ted Melis, USGS; John Swett, Reclamation; Kara Gillon, Defenders of Wildlife; and Taylor Hawes, The Nature Conservancy.*

*“There are certainly places in the Colorado River Basin where water and power providers have changed their operations to make accommodation for environmental concerns.”*

*— Jennifer Pitt,  
Environmental Defense Fund*

Beyond the fish recovery efforts lay the larger efforts to reconcile the many demands placed on the river with the environmental strain it's under. Taylor Hawes, leader of The Nature Conservancy's Colorado River Program, said the convergence of environmental and resource management challenges have put the river “on the verge of a crisis.”

“If we don't figure out ways to course correct we are going to be in a crisis similar to what we've seen in [California's] Bay-Delta,” she said. “There will be 12 to 15 million more people in the next 30 years and we need to provide drinking water. Agriculture is threatened due to the pressure to transfer water to urban use. There is a billion-dollar recreational economy. If there is not water flowing in those streams that economy is threatened.”

Hamill called climate change “one of the most compelling issues” in the Basin and “a significant threat” that restoration programs throughout the Basin must contend with. Regional models indicate a hotter, drier basin during the next century, with altered patterns of runoff and water temperature. The changes could cause the river to lose 5 percent of its native fish species, said Kara Gillon, senior staff attorney with Defenders of Wildlife.

“Considering [the Colorado River] has a small assemblage of native species, that's a significant impact,” she said. “We could see ‘heat stroke’ in our fish to the level of extinction.”

While Reclamation is evaluating the impacts of climate change on water supply, delivery and power operations, there is no parallel effort to evaluate the impacts of prolonged drought on water quality or the natural, cultural and recreation resources, Hamill said. “This kind of gap will make it difficult to assess the implications of those changes to current recovery and conservation strategies,” he said.

Native fish also are threatened by non-native fish, which Hamill called “one of the most serious challenges” to achieving native fish goals for all restoration programs. According to Reclama-

tion, non-native fishes are “the most consequential factor preventing persistence and recovery of imperiled native fishes in the Southwest, and ... it is now apparent that presence of non-native fishes cancels any benefits from habitat protection and restoration.”

This issue of *River Report* looks at some of the issues associated with balancing the Colorado River's ecosystem and its water delivery system, based on the comments of a panel assembled at the Foundation's invitation-only Colorado River Symposium. The full written proceedings of the September 2009 conference will be published in Spring 2010.

### **Seeking a Sustainable River System**

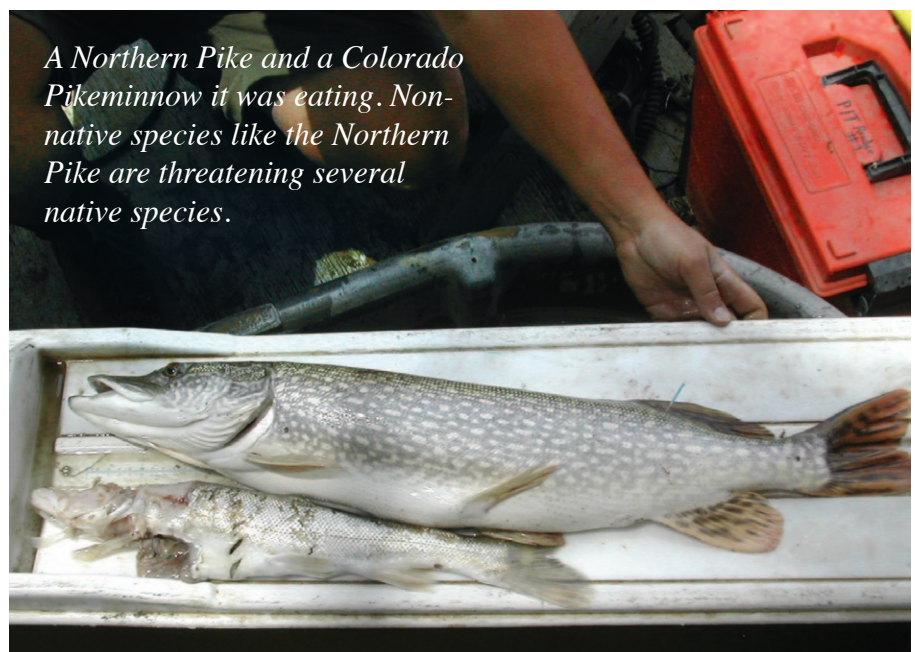
Once described as “too thick to drink, too thin to plow,” the Colorado River has seen substantial development that has brought water to faraway places and enabled the Southwest to thrive as a vibrant part of America. At the same time, the costs to the environment have been no

less substantial. The damming and diversion of the natural river system has had consequences intended and unintended, something that years of environmental laws have sought to rectify.

“There are certainly places in the Colorado River Basin where water and power providers have changed their operations to make accommodation for environmental concerns,” said Jennifer Pitt, senior resource analyst with the Environmental Defense Fund. “But just about all the Colorado River infrastructure was built before our modern environmental laws were on the books, so as those projects were built all the ‘giving’ was on the part of the environment, while the ‘taking’ was done by those who developed the resource.”

After many years of river operations designed to maximize water supply reliability and hydropower generation, the tide began to turn in the 1980s as agencies and stakeholder interests combined to pursue modifications designed to provide for the well-being of endangered species.

“The evolution of and amendments to operating criteria and the alteration of water supply and power generation activities to accommodate environmental concerns demonstrate a significant



commitment to the environment,” said Robert Lynch, assistant secretary-treasurer of the Irrigation and Electrical Districts Association of Arizona.

Whatever differences stakeholders may have, “it’s probably safe to say we all want a sustainable river system ... that will provide for the needs of humans and the environment for future generations,” Hawes said. The lack of an integrated approach “has led to winners and losers in the Basin, conflicts, uncertainty, loss of species, water shortages and increasing risk [and] sacrificing one use for the sake of the other has rarely worked out in the long run.”

Hawes said officials need to explore solutions such as water banking, possibly in the Upper Basin as a way to solve the needs of water managers and the environment. She stressed that environmental flow needs should be included in the planning process “and not be an afterthought.”

“We need to explore scenario planning at a basinwide scale so we fully understand the tradeoffs as we plan for our children and grandchildren,” Hawes said. “We can’t have it all. I think we all recognize that. It is about tradeoffs ...

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*—Taylor Hawes,  
The Nature Conservancy*

we can’t save every place and have every demand met.”

Numbers of endangered Colorado pikeminnow increased in the Colorado River from 1992 through 2005. Although numbers of Colorado pikeminnow decreased in the Green River from 2000 to 2003, preliminary information from 2006 to 2008 shows numbers are increasing. Humpback chub, also endangered, are declining in the Yampa River, remain stable in the upper Colorado River and, after a decade of decline, have increased by 50 percent in the Grand Canyon, Hamill said.

The conundrum of protecting and restoring native fish has prompted some to conclude that segregating native from non-native fish “is the only viable tactic” to save threatened native fish. This is being done in some headwater streams in the Gila River Basin, which starts in southwest New Mexico and meets the Colorado near Yuma, draining most of

southern Arizona, Hamill said. Unfortunately, the use of instream barriers to prevent upstream migration “is not technically or politically feasible in large rivers.”

Hawes said stakeholders “need to embrace the concept of adaptive management using sound science to determine whether we are hurting or helping the situation and adapting as necessary.” It is also important that sustainable funding sources be developed because “integrated water management is not going to be inexpensive but it is going to be critical to our future.” As such, she cited potential sources such as fees on water bills that better reflect “the true cost of water” as well as the needs of the environment.

### **Creating New Habitats: The MSCP**

On the Lower Colorado River, meeting environmental needs took a big step in 2005 with the Multi-Species Conservation Program (MSCP), a 50-year, \$626 million commitment to protect the Lower Colorado River environment while ensuring the certainty of existing river water and power operations. The MSCP strives to protect 26 covered species and their habitat in the Lower Basin, including six federally listed endangered and threatened species. The MSCP also is intended to reduce the likelihood that additional species will be listed as threatened or endangered during the life of the program.

The stated goal in the MSCP Habitat Conservation Plan is “work toward the recovery” of threatened and endangered species and also reducing the likelihood of additional listings, said John Swett, who manages the program for Reclamation. At the same time, current water and power production is being accommodated. “We are optimizing future water and power production. It’s a stated goal,” he said. “We are not ignoring the fact that as the population increases, we are going to have to deal with this.”

Beginning in 1996, officials began the framework of the MSCP, which has the goal of creating more than 8,100 acres of riparian, marsh and backwater habitat



*The Imperial Ponds habitat dedication Nov. 5, 2007 marked completion of the first MSCP backwater habitat restoration project along the lower Colorado River.*

for four listed species and 16 other species native to the Lower Colorado River. Swett said the need for environmental compliance in Colorado River operations, along with the need for certainty in the context of the increasing water supply impacts of Endangered Species Act (ESA) regulations, convinced water agencies to join in the MSCP process.

With that in mind, a decade of planning unfolded to provide the parameters of just what species preservation would look like. The process was far from easy. “Those 10 years ... were definitely challenging,” Swett said. “There were times we weren’t sure the MSCP would come to fruition.”

But perseverance paid off, leading to a multi-stakeholder, federal/non-federal partnership that seeks to balance use of the river in compliance with the ESA – “the driver of the program.”

Lynch said the MSCP is designed to provide mitigation and enhancement of the river corridor below Hoover Dam to the Mexican border “and, by treating the entire area holistically, improve the habitat for endangered and other species while allowing the Basin states and their water and power users to continue to benefit from those resources.”

The MSCP’s habitat conservation includes some ambitious goals. “We have over 1.2 million native fish that we have to stock back into the Lower Colorado River. We have over 8,100 acres of riparian marsh and backwater habitats we have to create for these covered species,” Swett said. “And we are creating new habitats. We are not enhancing existing, we are not restoring; we are creating new.”

Of course, starting habitat from scratch can be a challenge. Swett said in the early 1990s it took two weeks to plant seven acres of trees – a laborious task of digging 700 holes by hand. In the fourth year of the MSCP, more than 1 million trees have been planted and more than 3,300 acres of land plus water have been secured. More than 107,000 native fish have been stocked into the system. The results of the MSCP’s work are coming into view.

“Anytime you see a big bunch of trees [on the river], they’re ours,” he said. “It’s becoming a big difference and a noticeable difference.”

“Being the fourth and most recent of the river programs, we feel we are a little more evolutionarily advanced from the other ones; we weren’t so ‘fish-centric,’ we were looking at a more ecosystem approach,” he said.

Challenges remain, including the impact of climate change on future water supplies. “You can’t do passive restoration in most of the Colorado River,” Swett said. “It’s an active restoration program and it requires water to manage it through the 50 years.” There also are practical considerations, such as the desire to separate native from non-native fish, which is controversial because of the associated impacts on the sport fishing economy.

### **Changing Climate, Changing Needs**

While climate change “presents opportunities and challenges” to the environment and those dependent on the Colorado River, the depth of focus is lacking in assessing its impacts within the river basin, Gillon said.

“We need to see a conversation between water managers and natural resource managers when it comes to adapting to climate change,” she said. “The strategies for adapting to and increasing our resilience to climate change for ecosystems and for our river infrastructure could be complementary and it’s increasingly important that they not be at odds.”

Climate change “adds an incredible uncertainty to the mix,” with predicted flow reductions ranging from 5 percent to 30 percent. “We know it is coming, we just don’t when,” Hawes said. “We don’t know what it’s going to look like.”

Gillon said it’s important for everyone to recognize that reliable water supplies and resilient flood protection depend upon ecosystem sustainability.

She quoted from California’s draft climate change adaptation study as an

example. “Building adaptive capacity for both public safety and ecosystem requires that water and flood management projects maintain and enhance biological diversity and natural ecosystem processes,” she read. “Water supply and flood management systems are significantly more sustainable and economical over time when they preserve, enhance and restore ecosystem functions, thereby creating integrated systems that suffer less damage from and recover more quickly after severe natural disruptions. That’s the sort of thinking we need to see when we talk about climate change.”

Gillon said she hopes Reclamation’s new Colorado River Basin study will include strategies and alternatives to restore resiliency in natural ecosystem processes as they assess the imbalances that climate change will cause. “More sustainable” storage and modified dam operations “are things we will need to look at as climate change changes how our reservoirs currently work,” she said.

Reclamation Commissioner Mike Connor said the basin studies “are our first step down the path” of implementing the provisions in the Secure Water Act having to do with the Climate Change Adaptation Program and that “next year we’re certainly going to be looking to bolster our scientific expertise in this area.”

“The modeling is getting more in-depth,” he said at the Colorado River Symposium. “The risk assessment activities are getting more complicated and we’re going to start to build our capability to not only address that within Reclamation, but as we partner with other federal agencies as well as states and local entities in trying to get our arms around this problem.”

### **Explaining Cause and Effect**

On March 5, 2008 a surge of water was released into the Colorado River from Glen Canyon Dam – about 41,500 cubic feet per second for about 60 hours. The experiment, the latest in a series, aimed to stir up and redistribute sediment to enlarge existing beaches and sandbars,

create new ones and distribute sediment into drainage channels.

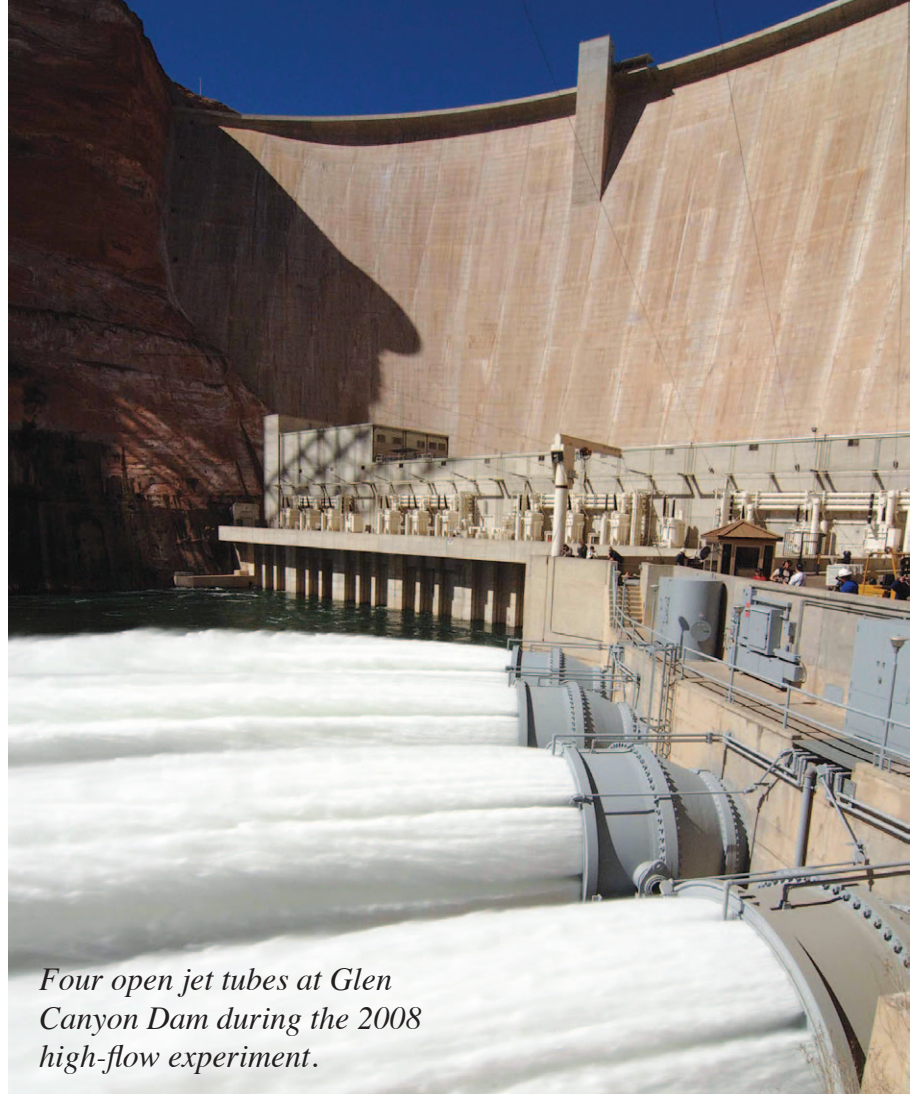
The high-flow experiments, which were unheard of 20 years ago, began with regularity in the mid-1990s at Glen Canyon. What remains elusive is a definitive account of the effects the pulse flow have on the river system below the dam. Ted Melis, deputy chief of the Grand Canyon Monitoring and Research Center, said the challenge is to move beyond the intuitive assumption that the mimicked flood must inherently benefit the Grand Canyon river corridor.

“The dilemma scientists have is knowing some treatment might be available and it might be effective but we can’t explain the cause and effect at least to each other so we don’t feel compelled to advocate it as an effective treatment for whatever the malady is,” he said.

High-flow experiments have occurred on other rivers – seven years on the San Juan and five on the Green – while scientists seek to clarify what it is they hope to achieve and how those goals are attained. “Are [high flows] achieving the desired restoration objectives? Maybe they are, maybe they aren’t,” Melis said. “Science has to explain why or why not and it becomes a dilemma to convey that information back to water managers who have to balance action with knowledge.”

While decisions should be based on the best available science, “we also need to err on the side of caution, because the social and environmental consequences of failing are too great,” Hawes said. “We have to be proactive to ensure survival of these species and it will mean operating our reservoirs in a way that balances the environmental and human needs.”

Scientists with the Glen Canyon Adaptive Management Program are looking to refine the high-flow experiments, which include gathering information from the other Basin restoration programs, including the degree to which flow experiments have been reported and conveyed to water managers, Melis said. He said he hopes experts will continue to share information on a large scale. “We want to share what we have learned



*Four open jet tubes at Glen Canyon Dam during the 2008 high-flow experiment.*

about the flow experiments,” he said. “If they are not working, we need to explain why and what the other alternatives might be if the flows don’t meet those objectives for trying to get the restoration accomplished.”

There are “many questions” about the ecology below Glen Canyon Dam, including the impacts of the dam “just being there vs. the way it is operated” and to what extent mitigation measures can or need to be employed, Lynch said. Because the “relative value” of the flood flow experiments is still being determined, “what we have, in fact, is a 27-year learning curve that is still being developed.”

### **Getting Beyond Narrow Positions: The YDP and the Ciénega**

Given the stretched water supplies of the Colorado River, the saga of the Yuma Desalting Plant (YDP) and the Ciénega de Santa Clara is a vivid example of all things related to the struggle to pro-

vide water for people while preserving a significant environmental asset. Created accidentally through the disposal of agricultural runoff, the Ciénega de Santa Clara is 40,000 acres of precious wetland habitat in what used to be a vast Colorado River Delta in Mexico.

The Ciénega is home to thousands of migratory and resident birds and is an important resting and feeding ground along the Pacific Flyway, the north-south route migratory birds follow from Alaska to South America. Thriving as it has with a steady source of water, the Ciénega has been part of the controversy regarding the obligation to provide Mexico with higher-quality water, a process that resulted in the YDP’s development to treat brackish agricultural return flows from Wellton-Mohawk Irrigation and Drainage District and return them to the river.

Operating minimally since its inception, the YDP remains a divisive issue. It has generated no small amount of attention but at the same time has opened an unprecedented level of dialogue between



# Calendar

officials and nongovernmental organizations (NGOs) about meeting water supply needs and obligations while keeping the Ciénega the vital ecological preserve it is. The issue has required more than its share of creative thinking because the United States is not obligated under the U.S.-Mexico treaty to provide water to support the Ciénega ecosystem.

Culp, the Phoenix attorney who has witnessed all the whys and wherefores of the issue, said the YDP “highlights why we need to keep thinking bigger and broader about the river system and maybe some of the opportunities that come out of doing that.”

While that process unfolds, Culp said it and other realities facing the Upper and Lower Basin states illustrate why it is time to think about the river and its uses in a different manner. “The lessons that came out of YDP and the whole Basin states experience with the shortage guidelines is recognition at the basic level that the status quo is unstable and it may not even be desirable,” he said. “The Ciénega, while it couldn’t be ignored as a resource, is not a resource that could survive in the long run on its current water supply, which is eventually going away. It was created by accident so it probably could be managed better.”

The quandary of the Ciénega’s fate has brought the recognition it “is a very small part of a big and very growing issue,” namely how to operate a river system in the future in the face of so much uncertainty.

“We are facing a much broader set of water supply challenges and environmental problems both inside the U.S. and with Mexico that have just made preserving people’s legal positions somewhat untenable,” Culp said. “Whether we are looking at the risk of shortage, population growth or environmental needs, we’ve got to begin to think differently. We have to get beyond zero sum outcomes and look for flexibility, look for practical solutions, think more holistically, try and view problems as part of a broader picture and begin thinking longer term.”

## January

- 27-29 52nd Colorado Water Congress Annual Convention**  
Denver, CO • Contact: 303-837-0812  
web: <http://www.cowatercongress.org/AnnualConvention>

## February

- 18-19 National Salinity Summit**  
Sponsored by Multi-State Salinity Coalition, Las Vegas, NV  
Contact: Donna Bloom, 775-626-6389, email: [donna.bloom@sbcglobal.net](mailto:donna.bloom@sbcglobal.net)  
web: <http://multi-statesalinitycoalition.com/#2010AG>
- 25-26 15th International Water Conservation and Xeriscape Conference**  
Sponsored by Xeriscape Council of New Mexico, Albuquerque, NM  
Contact: 505-468-1021, web: [http://www.xeriscapenm.com/xeriscape\\_conferences/2010/index.php](http://www.xeriscapenm.com/xeriscape_conferences/2010/index.php)

## March

- 2-4 Annual Conference**, sponsored by Nevada Water Resources Association  
Las Vegas, NV • Contact: 775-473-5473, web: <http://www.nvwra.org/events.asp#2010NWRA>
- 10-12 Water Education Foundation’s Lower Colorado River Tour**  
Las Vegas, NV • Contact Diana Farmer, 916-444-6240  
email: [dfarmer@watereducation.org](mailto:dfarmer@watereducation.org), web: <http://www.watereducation.org/tours>
- 18-19 Nevada Water Law**  
Sponsored by CLE International, Reno, NV  
Contact: 800-873-7130, web: [http://www.cle.com/product.php?proid=1188&page=Nevada\\_Water\\_Law](http://www.cle.com/product.php?proid=1188&page=Nevada_Water_Law)
- 25-26 Water Education Foundation’s Annual Executive Briefing**  
Sacramento, CA • Contact: Diana Farmer, 916-444-6240  
email: [dfarmer@watereducation.org](mailto:dfarmer@watereducation.org),  
web: <http://www.watereducation.org/conferences>

## April

- 5-8 Annual Conference**, sponsored by New Mexico Rural Water Association  
Albuquerque, NM • Contact: 505-884-1031, web: <http://www.nmrwa.org/2010conference.php>

## May

- 13-14 Law of the Colorado River**  
Sponsored by CLE International, Reno, NV  
Contact: 800-873-7130, web: [http://www.cle.com/product.php?proid=1196&page=Law\\_of\\_the\\_Colorado\\_River](http://www.cle.com/product.php?proid=1196&page=Law_of_the_Colorado_River)

## June

- 27-29 Western Governors Association Annual Meeting**  
Whitefish, MT • web: <http://www.westgov.org>

Contact Sue McClurg with your calendar items from July 2010 through December 2010 for inclusion in the Summer issue of River Report, [smcclurg@watereducation.org](mailto:smcclurg@watereducation.org) or 717 K Street, Suite 317, Sacramento, CA 95814

## Judge's Ruling Jolts Basis of Quantification Settlement Agreement

*A tentative court ruling has raised questions about how much the state can spend to mitigate water transfer effects on the Salton Sea.*

A Sacramento Superior Court judge has tentatively ruled the state's agreement to pay for Salton Sea environmental mitigation costs under a historic Colorado River transfer agreement is a constitutionally invalid unfunded mandate – a development that has interested parties pondering the future of shared water use.

Judge Roland Candee's tentative ruling Dec. 10 said the 2003 Quantification Settlement Agreement (QSA) was inconsistent with state law, which prohibits the incurrence of debt more than \$300,000 without appropriation of the Legislature. If the ruling stands, it would invalidate the joint powers authority agreement that was entered into by the federal government, the Imperial Irrigation District (IID), the Coachella Valley Water District, the Metropolitan Water District of Southern California and the San Diego County Water Authority (SDCWA). Candee made no further decisions Dec. 17 after a two-hour hearing. It is unclear when he will issue a final ruling.

The decision will not have an immediate impact as appeals are expected to take years in the state and federal court system. "It's way too premature to push the panic button," Dennis Cushman, assistant general manager of the San Diego County Water Authority, told the *San Diego Union-Tribune*.

Nevertheless, the QSA is viewed as the foundation for many of the subsequent multi-state/federal agreements related to managing the Colorado River in times of surplus and shortage, and

the other Colorado River Basin states are closely watching. "[The ruling] just causes so much uncertainty and it destabilizes everything at a time when having stability among the states is critically important," Pat Mulroy, general manager of the Southern Nevada Water Authority told the Associated Press.

News of the tentative ruling came during the annual Colorado River Water Users Association conference. "Reclamation has valid and binding agreements with California agencies and plans to stand by those agreements," U.S. Bureau of Reclamation Commissioner Mike Connor said at the conference.

The QSA quantified how much of the state's annual 4.4 million acre-feet of Colorado River water was available for the four California water districts, making possible water transfers among them, including a 35-year transfer (with potential extensions to 75 years) of water from IID to SDCWA. The QSA also commits the state to a restoration path for the environmentally sensitive Salton Sea and provides full mitigation for these water supply programs. Restoring the state's largest lake was a crucial piece of the agreement.

Candee ruled the state improperly agreed to pick up much of the cost of saving the shrinking Salton Sea in the southeastern California desert. The state put no limit on costs, "even if they ultimately amounted to millions or billions of dollars," he wrote. "The Court has no ability to sanction a way to contract around the Constitution."

Under the QSA, the state committed to pay mitigation costs that exceed \$133 million. Candee's ruling compared that to a "blank check."

According to news reports, IID will meet with the other QSA parties to discuss how to deal with paying for Salton Sea mitigation, including possible funding from the Legislature to mitigate impacts to the Salton Sea caused by the water transfer.

"Among the options the board will be considering are direct talks with the other parties and the state to address any deficiencies in the Salton Sea mitigation funding mechanism and obtaining a continuing appropriation from the Legislature for impacts to the Salton Sea caused by the water transfer," IID General Manager Brian Brady said in a statement.

For those familiar with the case, the ruling was unanticipated, although the legal theory (and its possible challenge) regarding the responsibility for Salton Sea restoration always existed. Because the Salton Sea is such a critical piece of any water-sharing agreement, sources said the court ruling poses a direct threat to the peace unless all the involved parties can preserve their position while finding a funding source for the Salton Sea.

"The constraint on IID is that if they don't transfer they face the ... threat of reduction which spurred them in the first instance," said a source familiar with the case. "The QSA is critical for SDCWA so it may try to corral everyone not to break away."

In a separate lawsuit filed in federal court Oct. 9, Imperial County and the Imperial County Air Pollution Control District Imperial are challenging the legality of the QSA based on possible adverse impact on air quality as dust is stirred up from the exposed Salton Sea bed. •

– Gary Pitzer

An example of that burgeoning relationship occurred with the initial commitment by U.S. and Mexican officials, plus NGOs, to provide replacement water to the Ciénega during times the YDP is operated. “The significance of that agreement is ... the commitment itself in which each of our countries found some value in making a commitment to the other,” Culp said. “It is important [the Ciénega] was recognized as having significance beyond a legal argument and which had to be addressed through a thoughtful binational discussion.”

Culp said the YDP agreement could serve as a template for similar resolutions. “To me, the most basic lesson is that you had a group of people who it seemed could never get along with each other, but by virtue of taking time to sit down and share information and perspectives and begin building relationships and trust ... with a common goal ... that process I think is indefinable but it produces results,” he said. “The relationships that were formed there ended up being more important than the outcome itself.”

### **Making the Leap Together**

Managing the Colorado River’s uses for the next century is not likely to be based on any blueprint developed since the Colorado River Compact was signed in 1922. For this reason, it is necessary to chart a course that recognizes the evolutionary process that has occurred since the river’s most significant development and how that impacts how adaptations are made.

“Rather than trying to answer the question about who has ‘given’ more, it may be more useful to ask if today we have a functioning Colorado River ecosystem, and if we have sustainable conditions for the species that depend on this resource,” Pitt said. “I’d say in some parts of the watershed the species and their habitat are doing all right, but in many, perhaps most, reaches there are serious problems. The fact of the matter is that if we want a functioning river ecosystem, and we don’t want to drive the species that depend on it to extinction, we will need to make additional

changes, including habitat restoration, and, in some cases, operational changes to improve environmental flows.”

A “common challenge” to all the restoration programs is to assess the overall effectiveness of actions taken to preserve and bolster fish populations, said Hamill with USGS. “The fact that multiple actions are being implemented simultaneously in combination with natural variability in the ecosystem and the long time it takes for native species to show improvement makes it extremely difficult to evaluate the success of any individual experimental or management action.”

As such, monitoring is “critical” to determine the degree to which success occurs. “The importance of monitoring cannot be overstated yet historically it has not been included consistently in restoration programs,” Hamill said. “Often it is done qualitatively or anecdotally and not sustained for a sufficient time or intensity to adequately track resource conditions.”

Development of an overarching science authority for the Colorado River Basin would “promote a more effective balancing between environmental and water supply objectives” and would allow for setting basin-wide priorities.

“Some would say this goes beyond the compliance requirements of the ESA or Grand Canyon Protection Act,” he said. “That may be true but I believe it will lead to what is needed: a more sustainable and effective science-based conservation effort throughout the Basin.”

Swett said the subject of consolidating Colorado River restoration programs has been raised, but that it is unlikely a unified program would be formed. “Each individual area has a different story to tell ... so one solution ... doesn’t always overarch the entire river system. It’s a very long river and it changes reach to reach.”

Planning strategies need to be flexible enough to account for the variability of a changing climate and should not wait to take their cues from the federal government, Gillon said, adding that many states and municipalities already

are exploring what kind of flexibility is needed for adaptation. On the Colorado River, she said, there needs to be a discussion of how climate change will affect the many resource issues.

“I haven’t heard if anyone is looking at how climate change will impact the ecosystem, flood control, recreation, clean water, cultural resources – even just a sense of place and quality of life,” she said. “If we begin that discussion now we can make that leap together and be similarly vested in what happens.”

While not supportive of merging the four restoration programs, given the many extenuating circumstances such as budgetary limitations and the basin-wide impacts of invasive species and climate change, Hamill said “it is time to consider developing a broader framework to guide overall efforts.”

Such an approach, which would include an independent science organization, “would be useful in establishing fundamental science practices to guide restoration efforts throughout the Basin,” he said, “conduct regional scale analyses and assessments of the status of important resources, establish indices of ecosystem health and develop the necessary data to inform those indices and serve as a clearinghouse for reports and provide information on the best available management practices.”

But there is concern that those who manage the water system throughout the Colorado River Basin will be asked to somehow compensate for the anticipated loss of precipitation that comes with climate change. The Nature Conservancy’s Hawes, who was previously counsel to the Colorado River Water Conservation District, said “we all have to give a little bit to make this work,” which facilitates conflict resolution and moves negotiations forward.

“It’s not going to be one interest group’s ox that’s gored,” she said. “We all have to provide water and I think there are some things like water banking that can use those reservoirs to provide ecological needs but it’s not going to come just from water providers.” •



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