The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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SAN JOAQUIN SETTLEMENT

FRIANT DAM LITIGATION

by Harrison C. Dunning, University of California at Davis

Before the Second World War, the conventional thinking regarded water almost exclusively as a resource to be "put to work." That meant mainly power production, irrigation and domestic water supply. Water was "conserved" for those purposes through water projects. In California, any fresh water not so conserved was said to "waste" to the sea. Certainly there were a few occasions when water development became controversial, as in the years before 1913 when there was great opposition to damming the Tuolumne River in Hetch Hetchy Valley — a part of Yosemite National Park — in order to provide water for San Francisco. But such occasions were rare, and typically the proponents of water development were victorious.

After the Second World War, with good economic times, shorter work weeks and many seeking outdoor recreational opportunities, attitudes toward water began to change. Legislation was enacted in California in 1959 to declare it a beneficial use to provide water for fish or recreation. Section 1243, California Water Code. A proposal to build a large dam on the Eel River in California was shelved in 1969, in part because of environmental opposition. And in 1983, the Supreme Court of California held that the public trust doctrine is a proper basis for limiting the exercise of an appropriative water right, in that case with regard to diversions from creeks tributary to Mono Lake. *National Audubon Society v. Superior Court*, 33 Cal. 3d 419 (1983).

THE CENTRAL VALLEY PROJECT

As various municipal and regional water projects were constructed in California in the early twentieth century, state engineers studied ways to move even more water around the state. The Sacramento Valley, the northern portion of California's Central Valley — an agricultural cornucopia — was seen as a "surplus" region in terms of water, while the southern portion of the Central Valley, known as the San Joaquin Valley, was seen as a water deficient region. An area of particular concern was the east side of the southern San Joaquin Valley, where farmers were overdrawing the groundwater.

State engineers concluded that the best way to resolve the groundwater overdraft problem on the east side was to put a dam on the State's second largest river, the San Joaquin. Legislation to create a state-run Central Valley Project (CVP), which included a dam on the San Joaquin, was approved in 1933. But fears that in the midst of a depression the necessary bonds could not be sold, led California to ask the United States to take over the CVP. The federal government agreed to the State's request in 1935, and in 1937 the CVP was entrusted to the Bureau of Reclamation (Reclamation). Construction on Friant Dam began shortly thereafter.

DESIGN OF FRIANT DAM

No water project in California better represents the "put the water to work" (and ignore the environmental consequences) attitude than Friant Dam. One can imagine a Friant Dam designed to divert a portion of the San Joaquin for irrigation, with another

San Joaquin

Exchange Water

Impacts

Fishery Protection

portion of the water left to support the ecosystem along the river and recreational usage. But hostility toward "waste to the sea" was at its strongest at that time, and consequently the dam was designed to capture and export all river flow except for flood flows. (Later the government was forced to release a small amount of water to satisfy riparian rights for land immediately downstream from the dam.)

To make up for the lack of significant and regular flows of water downstream from Friant, Reclamation built the Delta-Mendota Canal. This canal takes water from the Sacramento-San Joaquin Delta, an interior estuary where the two rivers meet, to the Mendota Pool, a point well downstream from Friant Dam. That water is used to supply those who previously had relied on the natural flow of the San Joaquin River, for example a group known as the "exchange" contractors — users who exchanged their rights to natural flow in the San Joaquin River for rights to water from the Delta and the Sacramento River. Irrigators upstream from Mendota were compensated for their lost water supply.

ENVIRONMENTAL DEVASTATION

The environmental consequences of Reclamation's activity at Friant were devastating. A twenty-two mile stretch of river upstream from Mendota became entirely dry except when there were flood flows. Areas downstream of Mendota also were frequently degraded, often being filled mainly with agricultural return flows. A run of spring-run salmon became extinct. Fall-run salmon normally could go upstream only as far as the Merced River, a San Joaquin River tributary well below Mendota.

SECTION 5937

Although construction of Friant Dam itself was fairly rapid — it became partly operational in 1944, only five years after construction began — shortages of material occasioned by the Second World War delayed its completion. Even more delayed was the issuance of the state permit for Friant Dam, which was not issued until 1959. (It was common practice in California for Reclamation to build a water project and even to begin the diversion of water *before* obtaining a permit to appropriate at the point of diversion.) Throughout this period, a provision in state law — now Section 5937 of the Fish and Game Code — required owners of dams to release enough water to keep downstream fish in "good" condition. However, when state fish and game officials raised that provision with regard to Friant Dam, they were rebuffed. In 1951, the State Attorney General ruled that both the state and the federal Central Valley Acts take precedence over the release provision, so that water needed for full operation of Friant need not be set aside for fish. (This ruling, published at 18 Op. Att'y Gen. Cal. 31 (1951), was in effect rescinded by the Attorney General many years later when he opined that the earlier interpretation "can no longer stand." 57 Op. Att'y Gen. Cal. 577 (1974)). Later efforts to use a private attorney to represent the Department of Fish and Game in a lawsuit making the same claim were also rebuffed.

FRIANT LITIGATION

Thus, matters remained until the water service contracts executed by Reclamation for the Friant Division between 1948 and 1955 were coming to the end of their forty-year terms. In December 1988, a coalition of environmental and fishing organizations led by the Natural Resources Defense Council filed a lawsuit against the regional director of Reclamation regarding renewal of the contracts. The gist of the complaint was that by failing to prepare an Environmental Impact Statement (EIS) on the contract renewals, Reclamation had violated the National Environmental Policy Act (NEPA). Subsequently, the complaint was amended in two important ways: (1) to allege violations of the Endangered Species Act (ESA); and (2) to allege a violation of Section 8 of the Reclamation Act of 1902. Section 8 requires the Secretary of the Interior, under whose authority Reclamation operates, to proceed in conformity with state laws on the control, appropriation, use or distribution of water used in irrigation. That requirement has been held to require compliance with state law unless it is inconsistent with a clear congressional directive. *California v. United States*, 438 U.S. 645 (1978).

The State law relevant to the Friant litigation is the same provision fruitlessly raised by State Fish and Game officials at the time Reclamation obtained its permit for Friant Dam (see Section 5937, discussed above).

THE CVPIA

The Friant litigation was complicated by the fact that Congress in 1992 enacted omnibus water legislation which had some provisions on the Friant Division (The Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, 106 Stat. 4600). The Friant Division provisions were contained in Title 34, known as the Central Valley Project Improvement Act (CVPIA). That act, anathema to the water establishment in California, was packaged with many water provisions favored by the water

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Editors: David Light
David Moon

Phone: 541/ 343-8504
Cellular: 541/ 517-5608
Fax: 541/ 683-8279
email:
thewaterreport@hotmail.com
website:
www.TheWaterReport.com

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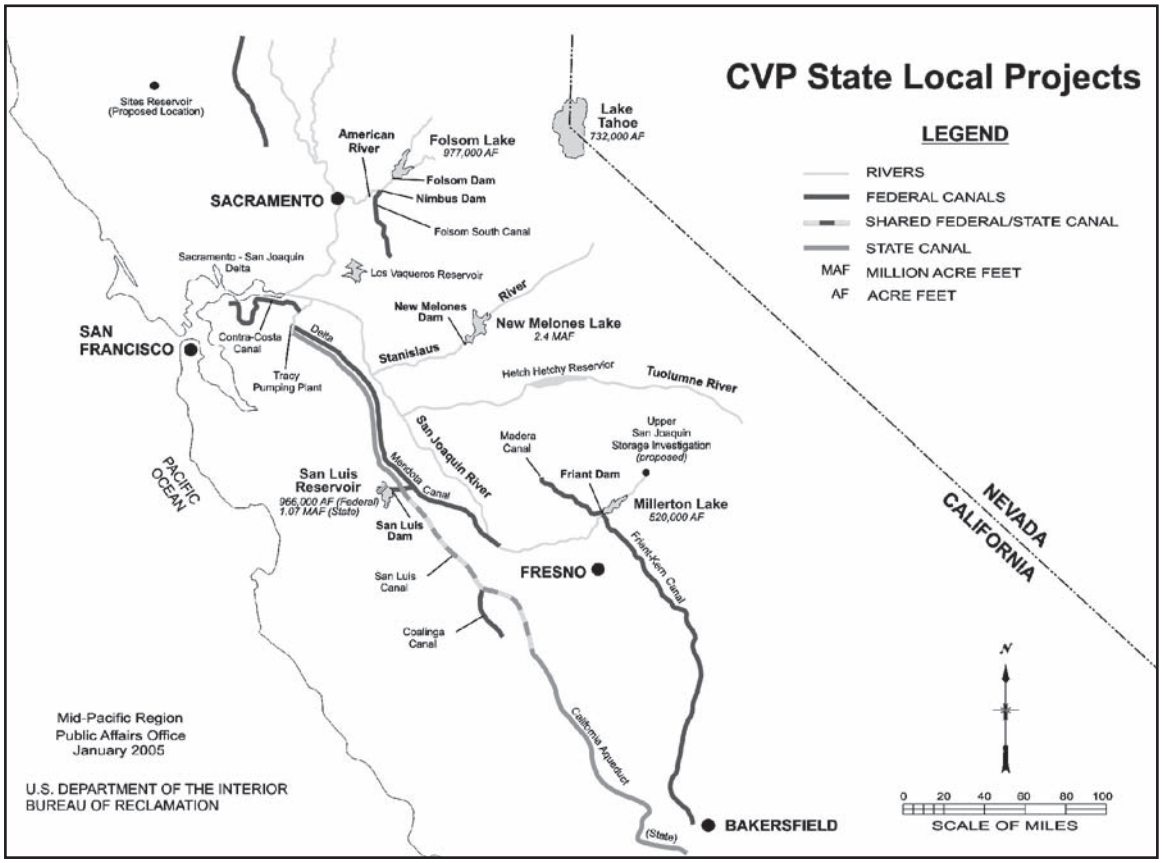
San Joaquin

Central Valley Project



CVPIA

establishments of other western states. As a consequence, the omnibus bill was signed by President Bush, as it happened just a few days before the 1992 presidential election.

The CVPIA had two provisions particularly relevant to the Friant litigation: one required an Environmental Impact Statement (EIS) before any subsequent renewal of a Friant Division contract; and the second required the Secretary of the Interior to develop a "reasonable, prudent, and feasible" comprehensive plan "to address fish, wildlife, and habitat concerns on the San Joaquin River" — a plan which in fact has never been prepared.

EIS Required

The EIS requirement, of course, went to the heart of the plaintiffs' initial complaint. Since the comprehensive plan provisions prohibited releases for the restoration of flows between Gravelly Ford (where the releases for riparian lands downstream of Friant terminate) and the Mendota Pool without specific congressional approval, the defendant and the intervenors in the litigation argued that the CVPIA preempted Section 5937, i.e., it provided the "clear congressional directive" needed to overcome Section 8 of the Reclamation Act of 1902 (see discussion above under Friant Litigation). This argument failed, however, as the language prohibiting flows for downstream restoration without specific congressional approval confined the prohibition to releases made "as a measure to implement this title," i.e., Title 34 of CVPIA. What the plaintiffs sought were releases to comply with Section 8 and Section 5937, not to comply with Title 34.

Presumption Issue

OTHER JUDICIAL RULINGS IN THE 1990s

Contract Condition

Early in the Friant litigation, in denying a motion by the plaintiffs for a preliminary injunction against further Friant Division contracts (one having already been signed) without an EIS, the federal district court judge hearing the case (Laurence K. Karlton) ordered inclusion in subsequent contracts of a clause conditioning the terms of the contract on the final outcome of the case.

In the years from 1992 to 1997, Judge Karlton made several more decisions in the case. Although he ruled against the plaintiffs on the NEPA claim, he decided in their favor on the ESA allegation. As a consequence, he ordered that a number of Friant Division contracts be rescinded. He also decided that, although Section 5937 is within the ambit of Section 8, the Section 8/Section 5937 claim was not ripe.

9th Circuit Ruling

On appeal to the Ninth Circuit, the plaintiffs did very well. *Natural Resources Defense Council v. Houston*, 146 F. 3d 1118 (1998). The bulk of the appellate court's opinion dealt with the ESA aspect of the case. The court decided that the contract renewals were "agency action," a point contested by the water districts served from Friant, who had intervened in the case in 1989 and who participated actively thereafter. It ruled that Reclamation's interaction with the National Marine Fisheries Service (NMFS) on

San Joaquin

NMFS' Position

ESA Violations

winter-run chinook salmon, a species listed at that time as "threatened" and one which utilizes the Delta into which the San Joaquin River empties, was inadequate. NMFS had refused to concur in Reclamation's opinion that renewal of the Friant Division contracts was not likely to adversely affect the winter-run salmon, although NMFS also said formal consultation was not required. The Ninth Circuit concluded that under those circumstances, "the Bureau [of Reclamation] had a clear legal obligation to at least request a formal consultation." Finally, the Ninth Circuit also found that Reclamation violated the ESA when it executed a number of renewal contracts for the Friant Division prior to completing a formal consultation underway with the US Fish & Wildlife Service.

As a result of its ESA analysis, the Ninth Circuit approved the contract rescissions ordered by Judge Karlton. Given those rescissions and the CVPIA's EIS requirement, it decided that the NEPA claim was moot. The court also remanded the Section8/Section 5937 claim for a determination on the merits.

A FAILED ROUND OF SETTLEMENT TALKS

In 1999, negotiations began between two of the three groups of parties in the litigation: the plaintiffs and the intervenor water districts. The assumption in those negotiations seemed to be that any agreement would likely be accepted by the federal defendant. The negotiations went on for four years, and along the way some experimental environmental releases of water from the dam took place. But in the end a proposal by a federal mediator was turned down by the water districts, although it was acceptable to the plaintiffs. So the parties went back to court, and the long-argued question of the applicability of Section 5937 to Friant Dam was finally resolved.

BACK IN COURT: THE 2004 DECISION

Viiolation of California Law

When the Friant litigation returned to Judge Karlton's court after the unsuccessful round of negotiations, plaintiffs sought summary adjudication only as to liability under the Section 8/Section 5937 claim. The remedy was to be left for another day. But, after his review of several other issues — including the proper reading of Section 5937, possible preemption of Section 5937 by the CVPIA (in fact previously decided in favor of the plaintiffs) and the significance of the state's 1959 permit decision on Friant Dam — Judge Karlton concluded that the issue of the merits of the Section8/Section 5937 claim "is among the least difficult of the issues presented." Relying on documentation by the US Fish & Wildlife Service that the upper San Joaquin River once supported a large spring-run of chinook salmon and "probably" a small fall-run of the same species, but that both stocks "were extirpated when Friant Dam became fully operational," he found that "Reclamation has violated § 5937 of the California Fish and Game Code as applied to it by virtue of § 8 of the Reclamation Act of 1902." *Natural Resources Defense Council v. Patterson*, 333 F. Supp. 2d 906 (2004).

A SECOND ROUND OF NEGOTIATIONS

Remedy Phase

Early in 2005, Judge Karlton set February 14, 2006, for the beginning of a remedy phase of the Friant litigation. The goal of this phase would be to determine how much water had to be released from Friant Dam to comply with Section 5937, i.e., to maintain fish downstream of the dam in "good condition."

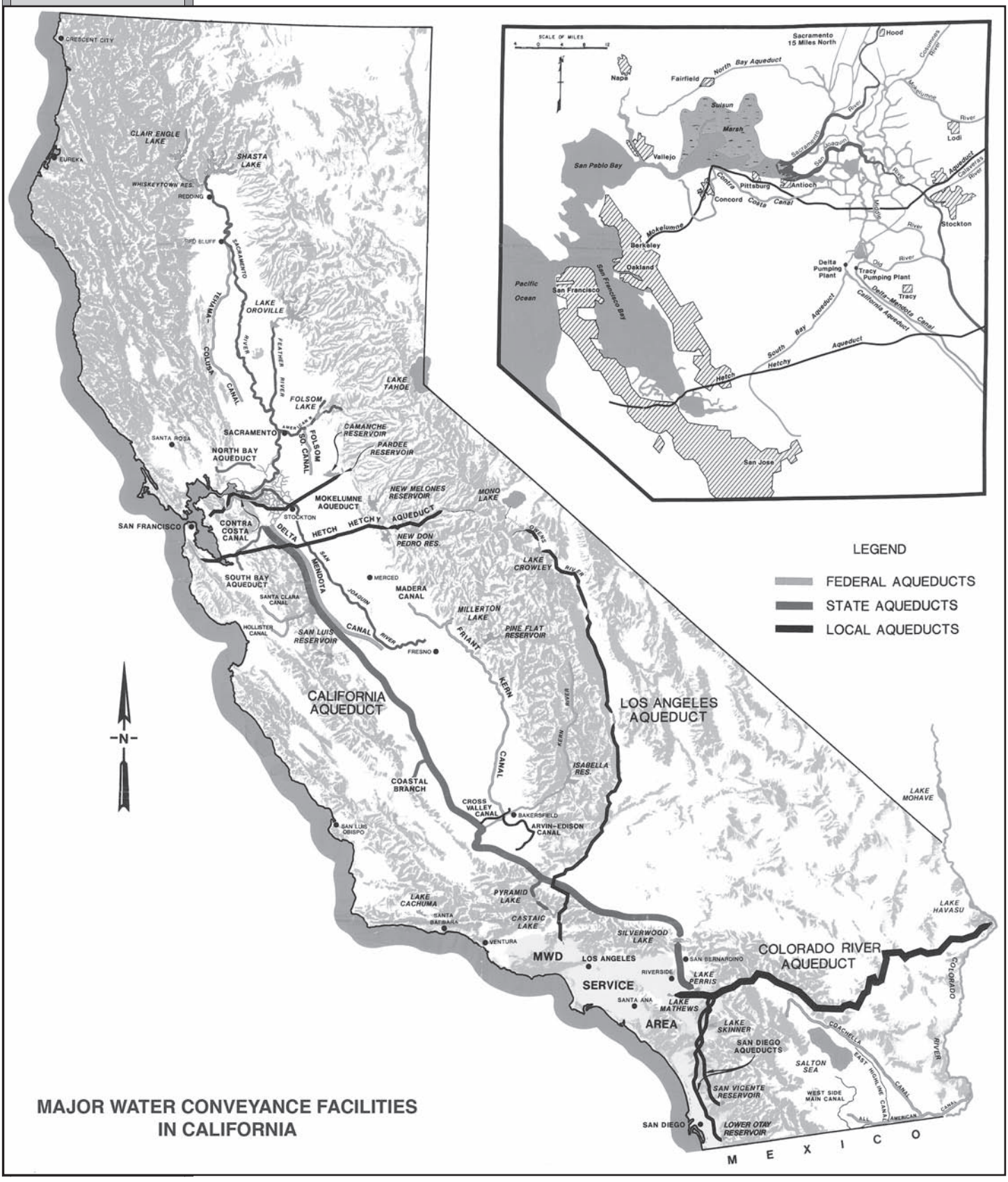
Fisheries v Other Interests

The setting of a trial date for a remedy phase to the litigation provoked intensive preparation by all three sides to the lawsuit. In August 2005, California Senator Dianne Feinstein and Congressman George Radanovich, chairman of the House Water and Power Subcommittee and a legislator from Fresno and other areas close to Friant, asked the parties to try again to reach a settlement. At this point, the parties fully realized how protracted, difficult and expensive the remedy trial would be. It was also a challenge to predict how Judge Karlton would rule. On one hand, many of his rulings in the 1990s favored the plaintiffs, and his 2004 decision opened with a detailed description of the San Joaquin River salmon and other native fish resources adversely impacted by Friant Dam. On the other hand, a footnote at the end of that decision noted "the issue of whether the reasonableness component of the CVPIA [apparently a reference to the fact the never-completed comprehensive plan on fish, wildlife and habitat concerns on the San Joaquin River was to be "reasonable, prudent, and feasible"] constitutes an overlay on the Bureau's [Reclamation's] duties." That same footnote also stated that "farmers throughout the valley have dedicated their lives and fortunes to making the desert bloom," and "[t]hat reality most likely should be taken into account when the court comes to address a remedy." (See Calfee, TWR #17)

Restoration Quantity

An additional factor which apparently led the parties to agree to a second round of negotiations (even though four years had been spent on the unsuccessful first round), were the views of the parties' respective experts on how much water restoration of the river would require. The water districts apparently believed the amount needed would be quite large, with a correlatively large impact on their water supply. The plaintiffs' experts, meanwhile, estimated that a considerably lower amount of water could do the job.

San Joaquin



San Joaquin

Congressional Preemption

Impact On Irrigators

Mitigation Options

River Restoration

Flow Certainty

Channel Improvements

Fishery Reintro

Funding Sources

Federal Authority

Finally, plaintiffs must have been acutely aware that any victory achieved in federal court could be undone by Congress. Judge Karlton had ruled Section 5937 had not been preempted (for example) by the CVPIA, but clearly it could be preempted by a future "clear congressional directive." Given the political makeup of our current Congress, future legislation to override a court victory for the plaintiffs on remedy had to be seen as a distinct possibility.

THE FRIANT SETTLEMENT

Throughout both rounds of negotiation which led to a settlement of the Friant litigation being submitted for approval to the court, it was assumed that restoration of the San Joaquin River below Friant Dam must not cause an undue impact on the roughly fifteen thousand farmers who utilize Friant water. Many who participated in the first round of negotiation on behalf of the water districts and the farmers they serve assumed this meant there could be *no* lessening of water supply or financial impact on the districts or the farmers they serve whatsoever. But the principle adopted in the settlement is that water management will aim "to *reduce* or avoid adverse water supply impacts to all of the Friant Division long-term water contractors." Models run for the Friant Water Users Authority (FWUA), an entity formed of twenty-two water agencies who obtain water from Millerton Lake (the reservoir behind Friant Dam), indicate that absent mitigation, releases of water to comply with Section 5937, as provided for in the settlement, would average about 170,000 acre-feet annually. This is about fifteen percent of average annual deliveries to the contractors. Mitigation, however, is provided for and anticipated in order to cushion the impact of the settlement on the farmers. First, a plan is to be developed and implemented to recirculate, recapture, reuse, exchange or transfer water released from Friant Dam to restore the river. Second, there is to be a "recovered water account" allowing contractors to purchase recovered water at a greatly reduced price — ten dollars an acre-foot, far below the usual rate.

The twin to the settlement's water management principle is, of course, the river restoration principle itself. One element is the release of water for fish, what the law directly calls for in Section 8 and Section 5937. This is to be done pursuant to a series of "hydrographs" — seasonal flow schedules which vary by water year type. These add water to flows that occur now, mainly from flood water releases. Provision also is made for "buffer" flows and for "augmentation" flows made up of water acquired from willing sellers. Important to the water districts is the fact the settlement calls for specified amounts — there is no "adaptive management" principle which might allow greater water releases. In addition, the flows are not to be changed by judicial action until after 2025, absent agreement of all the parties.

These releases of water will not, however, begin in the near future. After decades of operation of Friant Dam and other activities which have impacted the river channel, it is not in good condition to now receive fish flows. A second element of the restoration plan is a series of eleven channel improvements. One improvement, for example, is to bypass the Mendota Pool. Because these channel improvements will take time, full restoration flows are not planned until January 1, 2014.

The third element of the restoration plan is reintroduction of spring and fall-run salmon. This reintroduction, the capstone for the entire restoration project, is to be managed by the US Fish & Wildlife Service pursuant to a permit to be issued by NMFS.

FUNDING

The water management and restoration goals of the settlement will be expensive. Estimates vary a great deal, but the range appears to be $250 to $800 million. Fortunately, some money is already coming in. Because the CVPIA did not require that the Friant Division contribute water to the environment, as other CVP divisions were required to do, it imposed a special surcharge of seven dollars per acre-foot, as well as a per acre-foot restoration charge. These monies will, upon the enactment of the requisite federal legislation, be devoted to funding the settlement. For a number of years, any capital repayments made by the Friant Division will do so as well. Finally, it is hoped that additional federal appropriations and state contributions will be available.

FEDERAL LEGISLATION

The settlement acknowledges that, in addition to authorizing appropriations, federal legislation is needed to provide federal authority for some of the actions contemplated. To that end, the settlement includes as an exhibit a draft federal statute. The settlement even provides that if Congress does not enact the needed statute in "substantially" the form of the exhibit by December 31, 2006, the settlement is voidable at the election of any party.

Since the signing of the settlement on September 13, 2006, a third round of intense negotiations has taken place. The parties to the litigation have negotiated changes to the draft federal legislation with third parties, such as the exchange contractors, who believe they may be impacted by the restoration. Some,

San Joaquin

Take Issues

for example, fear ESA liability for "take" of a listed species if spring-run chinook salmon are successfully reintroduced to the San Joaquin River. The settlement acknowledges this concern, for in it the parties "anticipate" that NMFS will exempt incidental "take" of such fish as part of a biological opinion on implementation of the settlement. But third parties wanted such protection to be in the federal legislation itself, and now the parties have agreed to that.

CONCLUSION

Settlement of the Friant litigation provides a foundation for restoration of much of the San Joaquin River, a resource long neglected from an environmental point of view by most government officials and by most of the general public. The design and operational plan for Friant Dam were a product of the mindset on water of those in power in the 1920s and the 1930s – a product that would never be tolerated if the dam were built today. Now we understand that fresh water in our rivers does not "waste to the sea." Rather, it sustains fish and other aquatic life in the rivers themselves and then — of primary importance in California's Central Valley — contributes to the health of the estuary where fresh water is mixed by tidal action with salt water as it passes to the sea. Furthermore, as Joel Hedgpeth and Nancy Reichard wrote long ago, river waters "as they flow are the life of the growing plants along their bank...They carry with them the sediments that enrich the land and help the waters carve their channels and their banks." When past decisions on water resources come to be understood as mistaken, as it was for Friant Dam to capture for irrigation nearly the entire flow of a major river, an effort to correct the mistakes is commendable. That is what the Friant settlement, with the support of the east side farmers, seeks to do. It is an effort to achieve a reasonable balance between diversion of water for beneficial use and protection of instream flow, now also deemed a beneficial use. As precedent, we have the less complicated creek and lake restoration underway since the 1990s in the Mono Basin in California, as well as other river restorations throughout the world. The Mono restoration is going well; may it be the same for the San Joaquin.

Reasonable Balance

For Additional Information, Contact:

Harrison Dunning, UC Davis, 530/ 752-2898 or email: hcdunning@ucdavis.edu
Michael Jackson, Reclamation Mid-Pacific Region, 559/ 487-5116 or email: mpjackson@mp.usbr.gov
Ronald D. Jacobsma, General Manager, Friant Water Users Authority, 559/ 562-6305 or email: rjacobsma@friantwater.org
Craig Noble, Natural Resources Defense Council, 415/ 875-6100 or email: cnoble@nrdc.org

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HARRISON C. DUNNING is a Professor of Law Emeritus at the University of California at Davis. He serves on the Board of Directors of The Bay Institute of San Francisco, one of the plaintiffs in the Friant litigation. Professor Dunning served as Staff Director of the Governor's Commission to Review California Water Rights Law (1977-1978), as a member of the California Water Commission (1981-1982) and as a member of a commission established to advise CALFED (1996-2001).

Colorado River Operations

Seven States

Proposed Solutions

Storage Capacity

THE COLORADO RIVER

NEW OPERATIONAL GUIDELINES FOR LAKE POWELL AND LAKE MEAD

by Terrance J. Fulp, Nan M. Yoder and Douglas Blatchford, Bureau of Reclamation (Boulder City, NV)

INTRODUCTION

The importance of the Colorado River system to the western United States and the Republic of Mexico is well documented. Seven States depend in part on water from the Colorado River: California, Nevada, Utah, New Mexico, Arizona, Wyoming and Colorado. Much has been written recently in response to the lingering drought and increasing demands on the system. Questions such as "has the river run out of water?" and "how low can it go?" express the concern that the river system will be hard-pressed to continue to meet future demands, particularly if droughts tend toward increased magnitudes and longer durations. (See MacDonnell, TWR #16 and Southwest Hydrology, Volume 4, Number 2)

In response to these concerns, stakeholders throughout the Colorado River Basin (Basin) have been working together to propose solutions that include enhancing system water supplies via augmentation and water exchanges, managing demands through increased conservation and shortage-sharing agreements, and designing new operational guidelines that will allow the system to be operated more efficiently and effectively. The Bureau of Reclamation (Reclamation) has undertaken the preparation of an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act to analyze these proposals and make recommendations for implementation to the Secretary of the Interior.

To facilitate the understanding of the proposals under consideration, the current operation and state of the system is first summarized. This is followed by an overview of the EIS process and a description of the alternatives currently being considered, concluding with expectations with regard to the schedule over the next year.

CURRENT OPERATION AND THE STATE OF THE SYSTEM

The Colorado River is over 1,450 miles in length and drains approximately 250,000 square miles or about 12 percent of the total land area in the continental US (Figure 1). There are 12 major reservoirs on the main stem with a total storage capacity of approximately 60 **m**illion **a**cre-**f**eet (MAF). Lake Powell and Lake Mead combined have storage capacity of just over 50 MAF or about 83 percent of the total capacity. Approximately 92 percent of inflow to the system originates from the upper part of the Basin. The natural inflow into Lake Powell (inflow corrected for upstream reservoir regulation and upstream depletions) has been quite variable year-to-year, averaging about 15.1 MAF per year (Figure 2). Given current demands and the observed hydrologic variability, the system's ability to store four times the average annual inflow has provided a highly reliable water supply to date. The past seven years provide a good example.

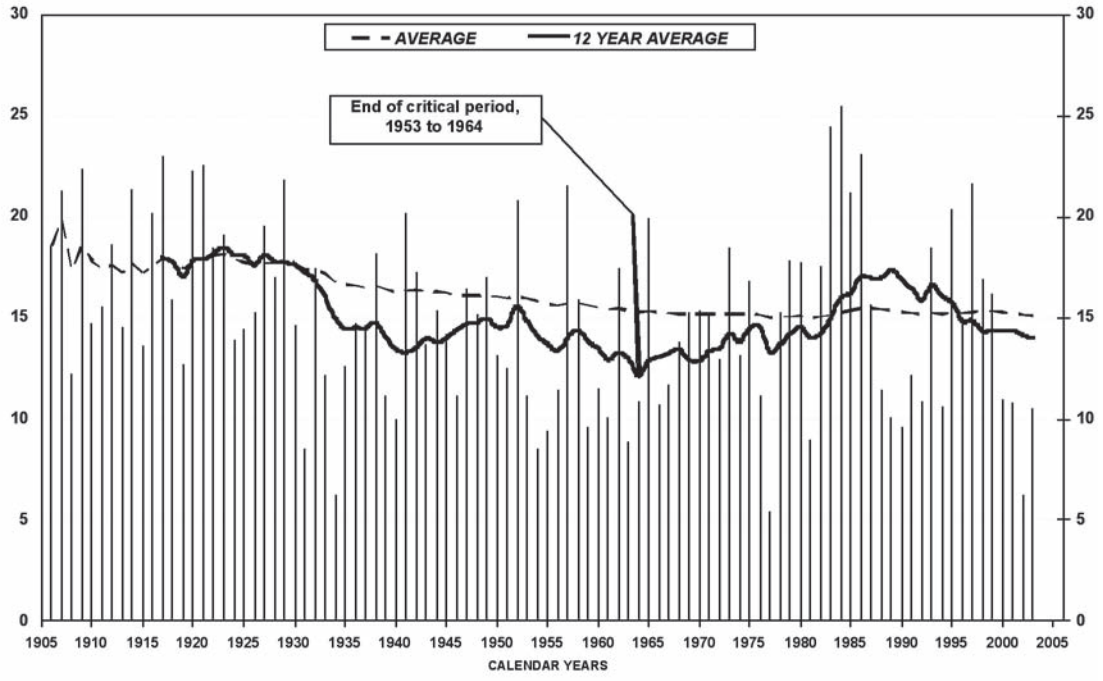
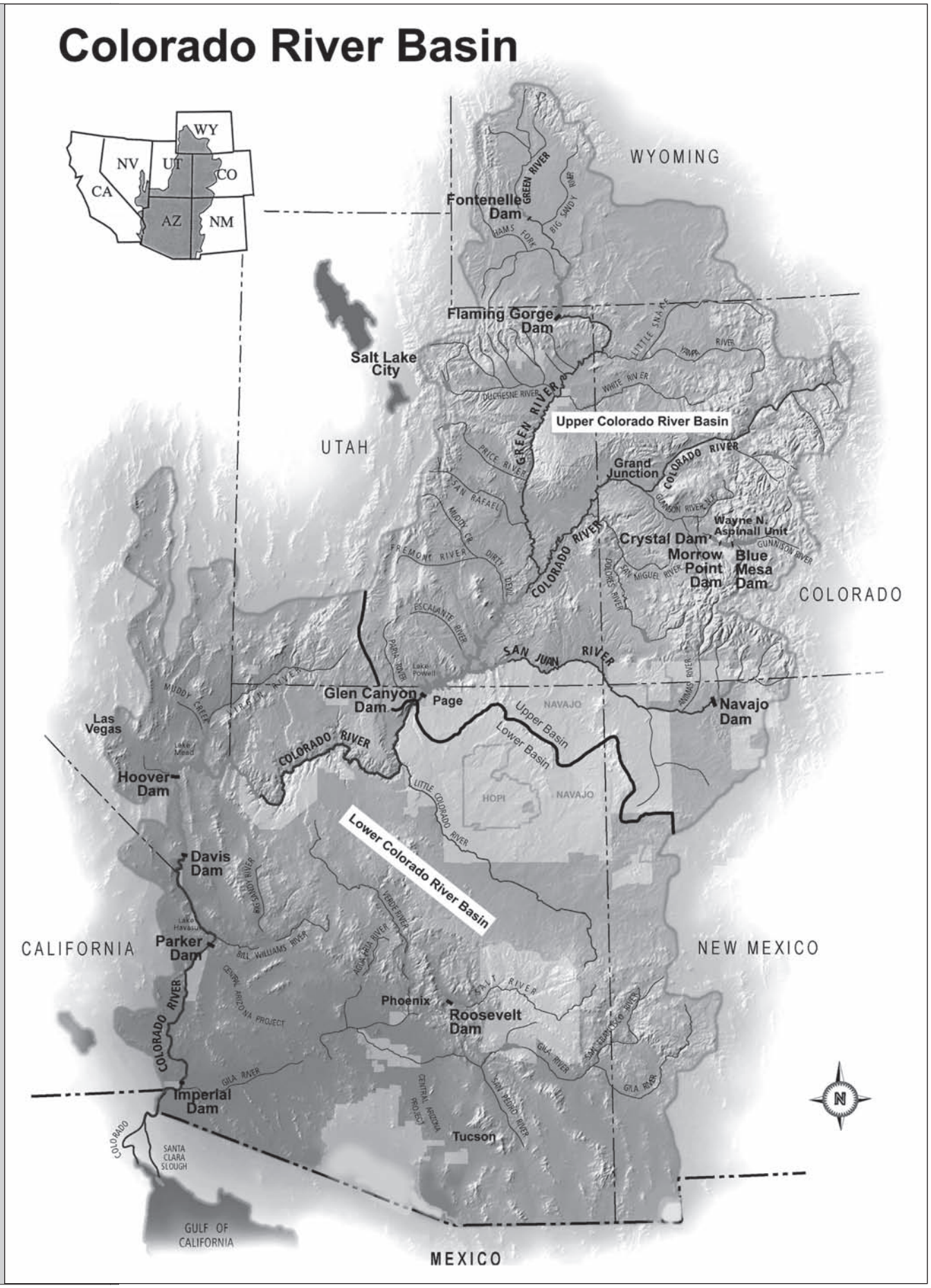


Figure 2
Natural Inflow Into Lake Powell 1906-2003

Figure 1



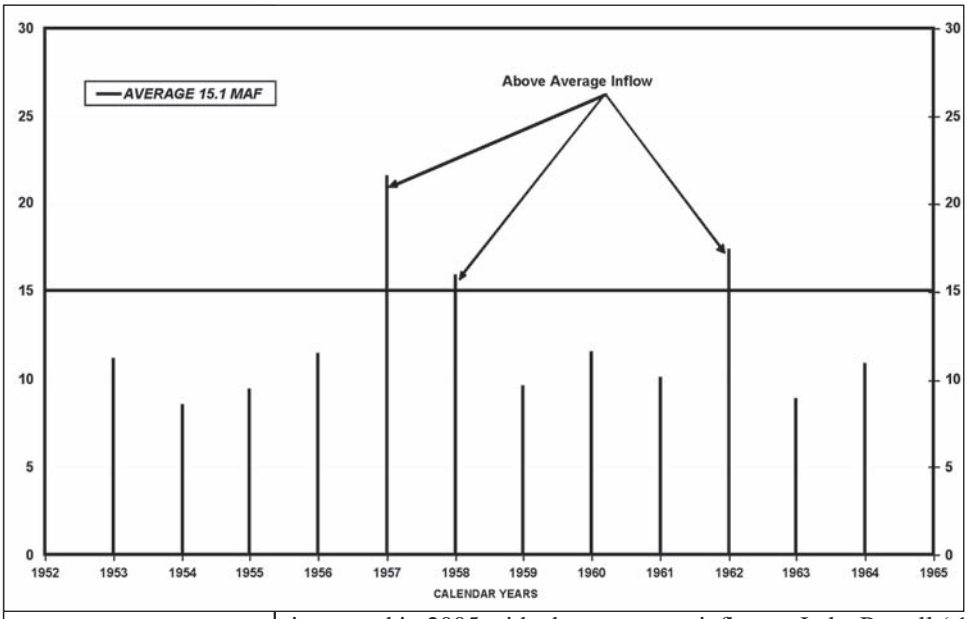


Figure 3
Natural Inflow
Into
Lake Powell
1953-1964

The Recent Drought and the Effect on Reservoir Storage

From 2000 through 2004, the Basin experienced the worst five-year drought in the past 100 years. Inflow into Lake Powell, adjusted for the effect of upstream reservoirs, was 62, 59, 25, 51, and 49 percent of average in 2000 through 2004, respectively, with the inflow in 2002 being the lowest on record. Fortunately, the reservoir system was nearly full at the onset of this drought, with a combined storage at Lake Powell and Lake Mead of 47.59 MAF (95 percent full) on October 1, 1999. The years of very low inflow resulted in significant drawdown with the combined storage decreasing to 46 percent of capacity on October 1, 2004, a drop of some 25 MAF. Hydrologic conditions improved in 2005 with above average inflow to Lake Powell (104 percent of average) and record-breaking tributary flows in the Lower Colorado Basin (over 200 percent of average). Lake Powell and Lake Mead gained over 4 MAF of storage in water year 2005 (from October 1, 2004 through September 30, 2005), effectively eliminating the effects on storage of one of the five drought years. However, drier hydrologic conditions returned in 2006 with an inflow to Lake Powell of just 73 percent of average. As of October 1, 2006, combined Lake Powell and Lake Mead storage was 51 percent of capacity. The effect of the drought on combined storage is summarized in Table 1.

Table 1

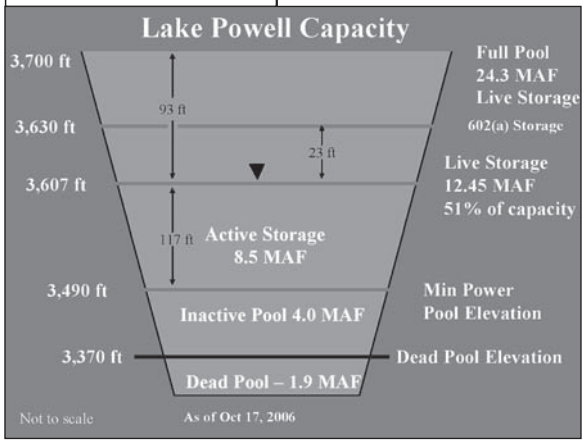
Table 1 – Unregulated inflow to Lake Powell and combined Lake Powell and Lake Mead end-of-water year storage, 1999-2006

Water Year	Inflow to Powell (% of average)*	Powell and Mead Storage, MAF	Powell and Mead % Capacity
1999	109%	47.59	95%
2000	62%	43.38	86%
2001	59%	39.01	78%
2002	25%	31.56	63%
2003	51%	27.73	55%
2004	49%	23.11	46%
2005	104%	27.24	54%
2006	73%	25.79	51%

*The average unregulated inflow into Lake Powell is based on a 30-year average, from 1971-2000.

Figure 4
Lake Powell:
Current & Key
Elevation & Storage
Values

Preliminary data show that the average flow over the last seven water years (2000-2006, inclusive) was the lowest seven-year average in 100 years. The question is often asked: is this drought near its end? Unfortunately, when compared to historical data, it is impossible to know exactly where in the drought cycle we may be. As shown in Figure 2, the worst 12-year average inflow occurred was seen from 1953-1964, inclusive. There were three years of above average inflow during that 12-year period, (see Figure 3) with inflow in one year (1957) over 150 percent of average. Despite the consecutive years of low inflows, all delivery obligations in the Lower Basin have been met throughout the past seven years, a testament to the value of the large amount of storage on the system. In the Upper Basin, some agricultural demands have not been met (estimated to be 0.6 – 0.9 MAF) primarily due to the lack of storage (Ostler, 2005). The question of water supply reliability in the future arises, however, given increasing demands and the risk of more severe droughts.



Effect of the Drought on Related Resources

Although water supplies have been relatively unaffected, declining reservoir storage has affected other resources, including power production and recreation. Reservoir elevation can be used as an indicator of these effects. Lake Powell as of October 17, 2006 was at elevation 3607 feet above **m**ean **s**ea **l**evel (msl), about 93 feet from full (see Figure 4). Similarly, as shown in Figure 5, Lake Mead is currently at elevation 1126 feet msl, about 94 feet from the top of the exclusive flood control space.

Colorado River Operations

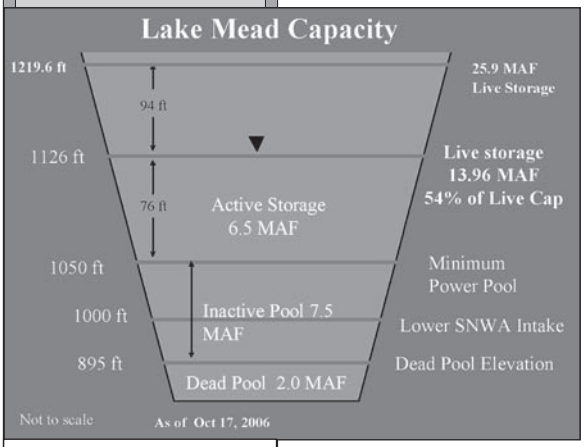


Figure 5
Lake Mead: Current & Key Elevation & Storage Values

The amount of energy produced at a hydroelectric power plant is dependent upon the rate of flow through the turbines and the potential energy of the water behind the dam (known as "head"). As lake levels decline, the capacity for generation decreases. For example, at Hoover Dam, generation capacity has been reduced by about 15 percent from 2074 to 1762 **m**ega**w**atts (MW) since 1999 because of the lower level of Lake Mead. In addition, if lake levels continue to decline, there is a point at which the turbines will not operate, either due to lack of water flow, or insufficient head. That water level is termed the "minimum power pool" elevation and varies at each reservoir. At Glen Canyon Dam, the level for minimum power generation is at about 3490 feet msl, some 117 feet below the current elevation, and is essentially the minimum level at which water can be drawn into the turbines (Figure 4). The elevation at which water cannot be delivered downstream either through the turbines and/or through the outlet works is known as "dead pool" elevation and is at elevation 3370 feet msl at Lake Powell. Note that the lake contains approximately 4 MAF of water between the minimum power pool and the dead pool elevations that could be delivered downstream through the outlet works.

At Hoover Dam, the dead pool elevation is at elevation 895 feet msl. Although water can still be drawn into the turbines at this elevation, the turbines currently in place do not allow for generation below about 1050 feet msl due to insufficient head. Changing the turbines to designs that can operate at lower heads as water levels fall may be an option depending upon the costs and benefits of such an effort.

Recreation has also been affected by the declining reservoir levels. At Lake Powell, the Hite Bay Marina became inoperable in 2003. At Lake Mead, three public launch ramps have been closed and over $10 million has been spent to keep the seven remaining ramps open. Relocation costs of the Las Vegas Boat Harbor and the Lake Mead Ferry Service is estimated to exceed $5 million. Further investments are anticipated to revamp water supply and wastewater systems at the remaining facilities at Lake Mead.

Current Operations

The operation of Lake Powell and Lake Mead is governed by a complex body of laws, decrees, contracts, and agreements, including the 1944 Water Treaty with Mexico, which are collectively known as the "Law of the River." Interpretations of this complex body of documents differ greatly and a discussion of the "Law of the River" is well beyond the scope of this article. However, an understanding of how the two reservoirs are currently operated is necessary in order to understand the importance of additional operational guidance.

"Law of the River"

Powell's Release

Lake Powell's annual release is currently set at 8.23 MAF and additional releases are made if one of two conditions is applicable: "spill avoidance" or "equalization." Under spill avoidance, if the reservoir is nearly full and additional releases are necessary in order to avoid future releases that would bypass the turbines, those additional releases are made. Under equalization, if Lake Powell is forecasted to have more water in storage by the end of the water year than Lake Mead, and there is sufficient storage in the Upper Basin reservoirs, additional water is released from Lake Powell in order to "equalize or balance" the storage in Lake Powell and Lake Mead. The storage requirement (known as the "602(a) storage requirement," from Section 602(a) of the Colorado River Basin Project Act of 1968), essentially states that there must be enough storage to meet the Upper Basin's obligations to the Lower Basin while not impairing future development in the Upper Basin.

"Equalization"

Mead's Release

Lake Mead's annual release is determined in one of two ways. Either the reservoir is under flood control operations, in which case the releases are determined by strict flood control regulations, or the release is determined to meet the water use demands in the Lower Basin and Mexico. These demands are determined by the apportionments to each Lower Division State and Mexico and the water supply condition for the particular year ("Surplus", "Normal", or "Shortage"). Under the Normal condition, water is delivered to meet a total of 7.5 MAF of use by the Lower Division States plus an additional 1.5 MAF for use in Mexico. Under Surplus conditions (as defined by the Interim Surplus Guidelines (ISG) adopted in 2001), additional water can be made available for consumptive use in the Lower Division States and Mexico, depending upon Lake Mead's elevation. Under a Shortage condition, less water would be made available; however, there are currently no guidelines with regard to when and by how much water supplies would be reduced. Under all water supply conditions, some additional water (on the order of 0.3 to 0.5 MAF each year, depending upon inflows from downstream tributaries) is released from Lake Mead in order to overcome losses downstream due to seepage, evaporation, and operational inefficiencies.

Supply Conditions

Storage Declines

Under the current operation, Lake Powell's storage declines rapidly during a severe drought, since Lake Powell continues to make annual releases of 8.23 MAF while inflows into the reservoir can be

Colorado River Operations

Mead Recovery

Table 2

Interstate Litigation

Shortage Guidelines

Management Strategies

EIS

Public Comment

substantially lower. The opposite effect can happen as a drought ends. Inflows are often greater than 8.23 MAF, but until Lake Powell recovers sufficiently to meet the 602(a) storage requirement (currently set to 14.65 MAF at Lake Powell or elevation 3630 feet msl), releases do not increase.

At Lake Mead, a simple water budget shows that when Lake Powell is releasing 8.23 MAF and Lake Mead is meeting demands under the Normal condition, Lake Mead's storage declines some 1.3 MAF each year. This would result in a decline in elevation of about 13 feet (see Table 2). Given the current operation, Lake Mead will decline less rapidly than Lake Powell during a drought but will also not recover as quickly since equalization releases will not occur until Lake Powell recovers sufficiently.

Table 2 – Typical water budget at Lake Mead for the Normal water supply condition in the Lower Basin when Lake Powell is releasing 8.23 MAF

Inflow (Release from Lake Powell + side inflows between Glen Canyon Dam and Lake Mead)	9.0 MAF
Outflow (Lower Division and Mexican apportionments + downstream regulation, gains, and losses)	-9.5 MAF
Mead evaporation loss	-0.8 MAF
Balance	-1.3 MAF

DEVELOPMENT OF ADDITIONAL OPERATIONAL GUIDELINES

As a result of the five consecutive low flow years from 2000 through 2004, concern among the water and power users of the Upper and Lower Basins escalated as the levels of Lake Powell and Lake Mead dropped. The challenge of limited supplies and increasing demand in the fastest growing region of the country stressed the legal and management framework of the Colorado River and brought the Basin to the brink of interstate litigation. Several States declared openly in the press that they were amassing war chests to prepare for the impending litigation. It became increasingly clear that purposeful action was necessary to avoid a major conflict.

2005 Annual Operating Plan Mid-year Review - Secretary's Decision and Challenge

During Water Year 2005, Interior Secretary Norton received differing recommendations from the Upper and Lower Basin stakeholders on how to operate Lake Powell and Lake Mead. In May of that year, Secretary Norton sent a letter to the governors of the seven Colorado River Basin States announcing her decision with regard to the mid-year review of the 2005 Annual Operating Plan (AOP) for the Colorado River reservoirs. The Secretary determined that an adjustment to the release amount from Lake Powell for May through September was not warranted, but that the Secretary has the authority to adjust releases from Lake Powell through the AOP process. The Secretary further directed Reclamation to initiate a process to develop specific Lower Basin shortage guidelines and coordinated reservoir management strategies to address operations of Lake Powell and Lake Mead under low reservoir conditions.

NEPA Process Initiated

In the Secretary's directive, a deadline of December 2007 was set for issuance of the new guidelines. Reclamation published a notice June 15, 2005, in the *Federal Register* seeking public comment on the content, format, mechanism and analyses to be considered during the development of management strategies for Lake Powell and Lake Mead under low reservoir conditions, including shortage guidelines for the Lower Basin. A series of public meetings were held in the summer of 2005, the outcome of which was a decision to begin a formal National Environmental Policy Act process and preparation of an Environmental Impact Statement (EIS). A Notice of Intent was filed in the *Federal Register* in September 2005 and a public scoping process was initiated including public meetings to solicit input on the scope of specific shortage guidelines and coordinated reservoir management strategies, as well as the issues and alternatives to be considered and analyzed in the EIS. Five federal agencies are cooperating in the development of the EIS, including the Fish and Wildlife Service, the National Park Service, the Bureau of Indian Affairs, the Western Area Power Administration, and the US Section of the International Boundary and Water Commission.

Summary Scoping Report

A Scoping Summary Report was released on March 31, 2006, summarizing and evaluating a total of 1,153 written comment letters received. Those letters contained some 5,340 individual comments, of which 278 were unique in nature, representing the views of the public; federal, State and local agencies; tribes; and non-governmental organizations (NGOs). The comments identified a broad range of concerns regarding the availability and reliability of Colorado River water supplies. While many of the concerns were related to reservoir operations during drought and under low reservoir conditions, some comments expressed a need to consider other water supply, water management, and operational strategies or programs that could improve the availability and reliability of Colorado River water supplies.

Colorado River Operations

Operational Levels

Interim Guidelines

Key Elements

Shortage Guidelines

Coordination

Conserved Water

Interim Surplus

No-Action

In particular, three important issues were identified:

- *Encourage Conservation of Water:* Conservation was identified as a tool to better manage limited water supplies and thereby minimize the likelihood and severity of potential future shortages. Water conservation can occur through a variety of approaches, including extraordinary conservation, forbearance, financial incentives to maximize conservation, dry-year options, and associated storage and recovery methodologies and procedures to address conservation actions by particular parties.
- *Consider a Full Range of Operational Levels at Lake Powell and Lake Mead:* It was suggested that this approach should be considered integral and prudent to the development of new low-reservoir operational guidelines, as the approach and management of these reservoirs at moderate and high elevations has a direct impact on the available water in storage — thereby affecting the likelihood and severity of potential future shortages.
- *Consider Interim Operational Guidelines:* Many comments noted the advantages of interim, rather than permanent, additional operational guidelines. The comments encouraged adopting these operational guidelines for both low and higher reservoir elevations for a consistent period of years. Actual operating experience for a period of years under interim guidelines would facilitate a better understanding of the operational effect of the new guidelines. Modifications would then be made, if necessary, during or preferably at the end of the interim period.

Four Key Elements of the Proposed Action

As a result of analysis of comments and public input received, the proposed action to be addressed in the EIS was refined to include four key elements that will be implemented through interim operational guidelines likely to be in effect through 2025. Five draft alternatives were formulated in the spring of 2006 to meet the purpose and need of the refined proposed action.

Each draft alternative includes some expression of the following four elements:

- *Shortage Guidelines:* This element is the primary aspect of the proposed action. Its purpose is the orderly management of water supplies during drought and low reservoir conditions. While Lake Powell and Lake Mead have large storage capacities, demands for Colorado River water supplies have continued to increase and prudent management of existing water supplies will help ensure sufficient supplies are available. The shortage guidelines would apply to the Lower Division States of Arizona, California, and Nevada, and could range from substantial shortages to no reduction of water deliveries until the reservoirs are empty. Most of the alternatives have discrete levels of shortage associated with various Lake Mead reservoir elevations.
- *Coordinated Reservoir Operations:* As discussed, Lake Powell and Lake Mead operations are currently coordinated only under high reservoir conditions through storage equalization. The draft alternatives consider various options designed to better utilize existing reservoir storage under lower reservoir conditions, both to enhance water supplies and to help balance the various benefits of the reservoirs.
- *Storage and Delivery of Conserved Water:* One way to increase water deliveries during droughts is the augmentation and conservation of existing water supplies. The alternatives consider options for the creation of a mechanism for the storage and delivery of conserved system and non-system water in Lake Mead, with various limits on the maximum size, storage, and delivery of the conserved system and non-system water pursuant to applicable federal law.
- *Interim Surplus Guidelines (ISG):* The 2001 ISG were implemented to provide greater certainty to water users in Lower Division States as to the availability of water in excess of normal apportionments. The ISG are due to expire in 2016, and since the Lower Basin shortage guidelines are anticipated to extend through 2025, consideration of an extension of the surplus guidelines is one of the elements of the proposed action. This element of the draft alternatives varies from terminating the ISG after 2007 to an extension of the existing surplus guidelines through 2025. This element of the alternatives helps establish an operational strategy for the full range of reservoir operations at Lake Mead.

DRAFT PROJECT ALTERNATIVES

The five draft alternatives (no-action and four action alternatives) were formulated through extensive coordination with stakeholders, cooperating agencies, and other interested parties. They represent a broad range of alternatives to meet the purpose and need of the proposed action. The draft alternatives have been developed to allow a broad range of potential impacts to be evaluated in the draft EIS and are as follows:

No Action Alternative: The Secretary would continue to develop an AOP that would among other things determine the water supply available to users in the Lower Basin and the annual release volume from Lake Powell. No shortage criteria would be developed and the Secretary would retain the authority to declare a shortage and/or adjust the annual release from Lake Powell through the AOP process.

Colorado River Operations

Alternatives

Basin States Preliminary Alternative: The seven Colorado River Basin States submitted a Preliminary Proposal Regarding Colorado River Interim Operations in a letter to the Secretary dated February 3, 2006. Their alternative proposes a coordinated operation of Lake Powell and Lake Mead that would minimize shortages and avoid risk of curtailments of Upper Basin use while providing a mechanism for promoting Lower Basin water conservation. Their proposal also would provide for the use of additional water supplies to meet current and future needs.

Conservation Before Shortage Alternative: A consortium of NGOs developed and submitted an alternative referred to as the "Conservation Before Shortage" Alternative in a letter dated July 18, 2005, and subsequently revised its proposal on July 7, 2006. The consortium includes Defenders of Wildlife, Environmental Defense, National Wildlife Federation, Pacific Institute, Sierra Club, and the Sonoran Institute. The NGOs' recommendation proposed that voluntary, compensated small-scale reductions in water use would be preferable to involuntary, large-scale disruptions in water deliveries that would potentially create unmitigated impacts.

Water Supply Alternative: This alternative was developed in consultation with a wide range of stakeholders and is intended to maximize water deliveries at the expense of retaining water in storage in the reservoirs for future use. This alternative would implement shortages only when insufficient water to meet full entitlements is available in Lake Mead.

Reservoir Storage Alternative: This alternative was developed in coordination with the cooperating agencies and other stakeholders. The general strategy of this alternative is to keep more water in storage in Lake Powell and Lake Mead by reducing water deliveries and increasing shortages, to benefit power and recreational interests.

Hydrologic Effects

ASSESSMENT OF IMPACTS TO RESOURCES AND NEXT STEPS

The resource analysis phase of the EIS process began in August 2006. The potential hydrologic effects of each draft alternative are being determined by utilizing an operations model, the Colorado River Simulation System (Zagona et al, 2001). Ninety-nine years of Colorado River historical runoff and inflow records are being used to postulate future inflow scenarios and model reservoir levels and water supplies under the alternatives. Further, for each of the alternatives the potential impacts to resources such as water supply, water quality, recreation, fish and wildlife, power, agriculture, etc. are being assessed.

ROD

Although much has been accomplished this year, the schedule remains quite aggressive. It is anticipated that a draft EIS will be published in February 2007, followed by a public comment period during March and April. The final EIS is scheduled to be published in September 2007, and a Record of Decision issued in December 2007.

CONCLUSION

Upon taking office, Interior Secretary Kempthorne affirmed the Department's commitment to adopt interim shortage and coordinated reservoir operations guidelines. These guidelines will provide a means to more effectively and efficiently manage the river through a full array of hydrologic conditions, and may represent one of the most significant accomplishments in the past century on the Colorado River. Despite the obvious difficulties still ahead in reaching these decisions, we must remain focused on the long-term picture of water management in the Colorado River Basin and prepare now to meet future water resource needs.

For Additional Information: Terrance J. Fulp, Reclamation, 702/ 290-8414 or email: TFULP@lc.usbr.gov

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Authors

Terrance J. Fulp, PhD, is currently Area Manager for the Bureau of Reclamation's Boulder Canyon Operations Office, overseeing water operations, water and power contract administration, and water accounting in the lower portion of the river from Lake Mead down. Terry is also the Project Manager of the planning effort to develop additional operational guidelines for Lakes Powell and Mead.

Nan M. Yoder is currently a Program Manager for the Bureau of Reclamation's Boulder Canyon Operations Office where she administers the project management support efforts for the planning effort to develop additional operational guidelines for Lakes Powell and Mead.

Douglas Blatchford is currently serving as the River Operations Group Manager at the Bureau of Reclamation, Lower Colorado Region. He is a professional engineer licensed in the Lower Division states with over 25 years of engineering related experience.

ARIZONA GROUNDWATER LAW

by L. William Staudenmaier, Ryley, Carlock & Applewhite (Phoenix, AZ)

Arizona Groundwater

Complex Mix

Arizona depends on groundwater to supply nearly 40% of the State's annual water demand. To protect this essential public resource, Arizona has developed a complex mix of common law interpreted by the courts, statutory provisions enacted by the Arizona Legislature, and regulations enforced by the Arizona Department of Water Resources. This article will describe the basic principles of Arizona groundwater law and discuss some of the most significant issues associated with the use of groundwater in Arizona today.

LEGAL ISSUES

Common Law Issues

Incompatible Regimes

There are two elements central to understanding Arizona's common law as it relates to groundwater. First and foremost, Arizona has always maintained separate and incompatible legal regimes for surface water and groundwater. While surface water is subject to the priority system of "first in time, first in right" under the Prior Appropriation Doctrine, groundwater is subject to the doctrine of reasonable use, which does not focus on time-based priority for determining rights to limited supplies of groundwater. Second, for more than 70 years, the courts have struggled to develop a workable definition of the boundary between appropriable surface water (subject to the Prior Appropriation Doctrine) and non-appropriable percolating groundwater (not subject to the Prior Appropriation Doctrine). Each of these issues will be discussed below.

Arizona's Bifurcated System of Water Law

Groundwater Law

Arizona has maintained separate groundwater and surface water regimes for more than 100 years. In fact, percolating groundwater was held not to be subject to the Prior Appropriation Doctrine by the Arizona Territorial Supreme Court eight years before Arizona became a State. In the case of *Howard v. Perrin*, 76 P. 460 (1904), *aff'd* 200 U.S. 71 (1906), the court stated that "filtrating or percolating water oozing through the soil beneath the surface in undefined and unknown channels, and therefore a component part of the earth," has "no characteristic of ownership distinct from the land itself, and therefore [is] not the subject of appropriation by another, but belong[s] to the owner of the soil." *Id.* at 462.

Percolating Groundwater

In 1931, the Arizona Supreme Court reaffirmed *Howard v. Perrin's* conclusion that "percolating subterranean waters [are] not subject to appropriation..." *Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton*, 4 P.2d 369, 376 (1931) (*Southwest Cotton*). The Court also noted that "the presumption is that underground waters are percolating in their nature. He who asserts that they are not must prove his assertion affirmatively by clear and convincing evidence." *Id.* The Court then went on to discuss the legal boundary between percolating groundwater and waters that are so closely associated with surface streams that they are considered "a part of the surface stream itself, and are simply incidental thereto..." *Id.* at 380. The Court identified this latter category of underground water as "subflow."

"Subflow"

The Doctrine of Reasonable Use

Competing GW Use

The doctrine of reasonable use was formally adopted by the Arizona Supreme Court (Court) in *Bristor v. Cheatham*, 255 P.2d 173 (1953). The Court compared the doctrine of reasonable use to the doctrine of correlative rights and concluded the doctrine of reasonable use provided the better basis for governing access to groundwater among neighboring landowners. *Id.* at 178. The doctrine of reasonable use "does not prevent the extraction of ground water subjacent to the soil so long as it is taken in connection with a beneficial enjoyment of the land from which it is taken. If it is diverted for the purpose of making reasonable use of the land from which it is taken, there is no liability incurred to an adjoining owner for a resulting damage." *Id.* at 180. This is the essential concept of the doctrine of reasonable use as applied in Arizona. So long as a landowner withdraws groundwater to make reasonable and beneficial use of the landowner's property, neighboring landowners have no claim for damages even if the groundwater withdrawals adversely affect water levels under the neighbors' property.

No Liability

The Court in *Bristor* placed an important limitation on the doctrine, however, by concluding that the defendants in the case were not protected against the claims of their neighbors because the defendants were withdrawing groundwater from one parcel of land and transporting it approximately three miles away to be used on other land. Because this withdrawal of groundwater did not benefit the property from which it was withdrawn, the property owner was not immune from liability. *Id.*

Arizona Groundwater

Strict Interpretation

Impetus for GWA

"Taking" Assertion

Ownership Dictum

Prospective Application

Landowner's Rights

"Usufruct"

Capture Rule

In the years after *Bristor* was decided, the Court decided a series of cases that sometimes strictly interpreted the limitation on transportation of groundwater away from the site of pumping, and at other times invoked equitable principles to allow limited transportation. The culmination of this line of cases came in 1976, when the Court decided *Farmers Investment Co. v. Bettwy*, 558 P.2d 14 (1976) (*FICO*). In *FICO,* the Court imposed a strict interpretation of the transportation rule, and issued injunctions against several mining companies and the City of Tucson, all of which were engaged in transportation of groundwater away from the site of pumping. The Court held that "[w]ater may not be pumped from one parcel and transported to another just because both overlie the common source of supply if the plaintiff's lands or wells upon his lands thereby suffer injury or damage." *Id.* at 21.

Because the Court's decision threatened to disrupt both economically important mining operations in the State and municipal deliveries of water to many thousands of residential and commercial water users, the *FICO* opinion created enormous controversy. This controversy ultimately led to adoption of the 1980 Groundwater Management Act (discussed in detail below) after several years of negotiations among competing water interests.

Constitutional Challenges to the Groundwater Management Act

Following adoption of the Groundwater Management Act (Act) several parties challenged the constitutionality of the Act. These parties asserted that the Act's limitations on a landowner's right to pump and use groundwater constituted a "taking" of private property without compensation. The plaintiffs relied on language in many of the cases discussed above stating that groundwater belonged to the owner of the overlying land.

Despite these numerous prior statements suggesting that landowners owned the water under their lands, the Court held that the 1980 Groundwater Management Act is constitutional in *Town of Chino Valley v. City of Prescott*, 638 P.2d 1324 (1981) (*Chino Valley*). In doing so, the Court rejected the plaintiffs' reliance on *Howard v. Perrin*, *Southwest Cotton* and other cases declaring that "[d]ictum thrice repeated is still dictum...We therefore hold that the statement first made in *Howard v. Perrin* and reiterated under circumstances where the exact nature of the overlying owner's rights to the water beneath his property were not in question is not precedent for the decision in this case." *Id.* at 1327. After thus reducing the status of its prior pronouncements on this issue to mere dictum, the Court continued at page 1327:

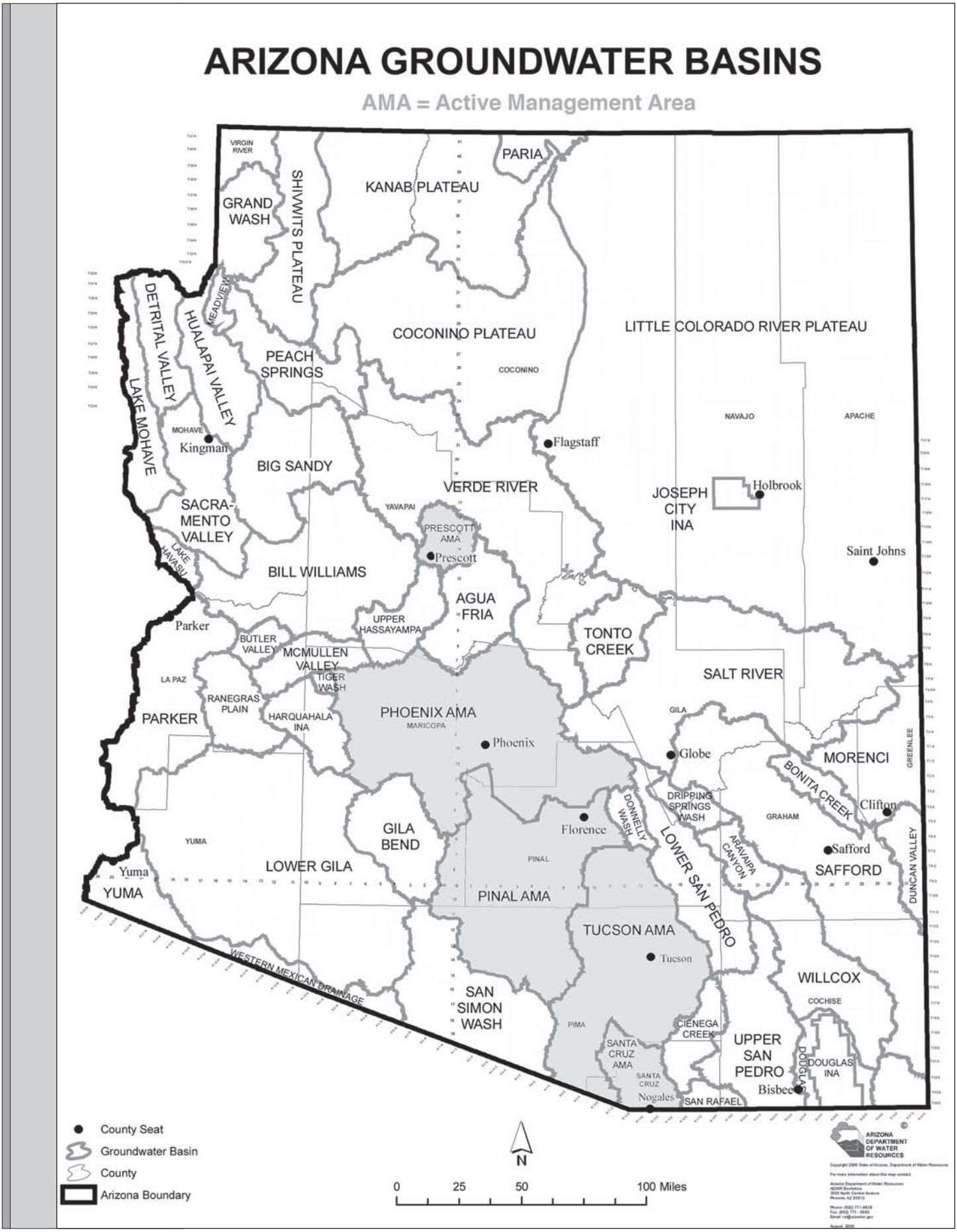
> The statements in *Bristor* and *Jarvis* do not mean that rights to the use of groundwaters cannot be modified prospectively by the Legislature. They only mean that courts will adhere to an announced rule to protect rights acquired under it and that if any change in the law is necessary, it should be made by the Legislature...We therefore hold that since the Act of 1980 is prospective in application, it is not a legislative encroachment on judicial powers.

The Court continued by explaining the nature of a landowner's right to percolating groundwater under the landowner's property (*Id.* at 1328): "In the absolute sense, there can be no ownership in seeping and percolating waters until they are reduced to actual possession and control by the person claiming them because of their migratory character. Like wild animals free to roam as they please, they are the property of no one."

Finally the Court quoted a case decided by the Florida Supreme Court to support its distinction between ownership of percolating water and a usufructary right:

> The common-law concept of absolute ownership of percolating water while it is in one's land gave him the right to abstract from his land all the water he could find there. On the other hand, it afforded him no protection against the acts of his neighbors who, by pumping on their own land, managed to draw out of his land all the water it contained. Thus the term 'ownership' as applied to percolating water never meant that the overlying owner had a property or proprietary interest in the corpus of the water itself...The right of the owner to groundwater underlying his land is to the usufruct of the water and not to the water itself. *Id.* (quoting *Village of Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 663, 666-67 (Fla. 1979)).

Based on this statement of the law, the Court then held "that there is no right of ownership of groundwater in Arizona prior to its capture and withdrawal from the common supply and that the right of the owner of the overlying land is simply to the usufruct of the water." *Chino Valley*, 638 P.2d at 1328. Finally, the Court concluded that the 1980 Groundwater Management Act did not violate the constitutional prohibitions on "taking" of private property without due process and just compensation. *Id*. Water users in the State have been operating under the requirements of the Act ever since.



Arizona Groundwater

"Subflow" Defined

Adjudication Test

Flawed Test

"Too Late"

"Subflow" Narrowed

Subflow Criteria

Subflow Zone Issues

As noted above, the Court adopted the concept of "subflow" to address groundwater that is so intimately related to surface streams that it should be administered under the Prior Appropriation Doctrine along with the surface water of those streams. See *Southwest Cotton*, 4 P.2d at 380. The Court defined subflow as "those waters which slowly find their way through the sand and gravel constituting the bed of the stream, or the lands under or immediately adjacent to the stream, and are themselves a part of the surface stream." *Id*.

From 1931 to 1987, the question of subflow was not actively addressed by the courts. In 1987, however, the trial court presiding over the Gila River Adjudication held hearings to address the interrelationship between surface water and groundwater. These hearings culminated in an order by the trial court that was intended to establish a test for differentiating between non-appropriable percolating groundwater and appropriable subflow. On appeal, the Arizona Supreme Court rejected the test. *In re the General Adjudication of All Rights to Use Water in the Gila River System and Source*, 857 P.2d 1236 (Ariz. 1993) (*Gila II*). In doing so, the Court emphasized the importance of applying an accurate test to determine whether a well is pumping subflow, concluding that:

> use of a flawed test for identifying wells pumping subflow could cause significant injustice. Many surface owners unable to mount a challenge could effectively lose their right to pump percolating groundwater, simply because their wells were improperly presumed to be pumping appropriable subflow. Considering the time, expense, and importance of accurate hydrographic survey reports, and the complex lawsuits over their correctness, it would be a senseless waste to use a flawed presumption for identifying wells pumping subflow.
> *Id.* at 1242-43.

In reaching this conclusion, the Court relied on its prior opinion in *Southwest Cotton* and concluded:

> [I]t is too late to change or overrule the case. More than six decades have passed since *Southwest Cotton* was decided. The Arizona legislature has erected statutory frameworks for regulating surface water and groundwater based on *Southwest Cotton*. Arizona's agricultural, industrial, mining, and urban interests have accommodated themselves to those frameworks. *Southwest Cotton* has been part of the constant backdrop for vast investments, the founding and growth of towns and cities, and the lives of our people. *Id.* at 1243.

The Court then stated that the *Southwest Cotton* decision "meant it when it said that in almost all cases 'subflow is found within or immediately adjacent to, the bed of the surface stream itself.' Subflow is a narrow concept. Thus, all water in a tributary aquifer is not subflow." *Id.* at 1245. The Court then remanded the issue back to the trial court for further proceedings to devise a test for determining subflow in a manner consistent with *Southwest Cotton* and *Gila II*.

In 1993 and 1994, the trial court conducted a series of hearings intended to establish criteria that would be used to identify the subflow zone. This court concluded that a subflow zone could only exist "adjacent [to] and beneath a perennial or intermittent stream and not an ephemeral stream." The court then adopted the following criteria to be used for identifying the geologic unit that would constitute the subflow zone:

> [I]n order to fulfill the definition of "subflow," the geologic unit must be saturated because of the need for a hydraulic connection between the stream and the "subflow."
> ...
> When it is saturated, that part of the unit qualifies as the "subflow" zone, where the water which makes up the saturation flows substantially in the same direction as the stream, and the effect of any side discharge from tributary aquifers and basin fill is overcome or is negligible.
> ...
> If we add the following additional criteria, then even more certainty and reliability is provided. *First*, the water level elevation of the "subflow" zone must be relatively the same as the stream flow's elevation. *Second*, the gradient of these elevations for any reach must be comparable with that of the levels of the stream flow. *Third*, there must be no significant difference in chemical composition that cannot be explained by some local pollution source which has a limited effect. *Fourth*, where there are connecting tributary aquifers or floodplain alluvium of ephemeral streams, the boundary of the "subflow" zone must be at least 200 feet inside of that connecting zone so that the hydrostatic pressure effect of the side

Arizona Groundwater

Criteria

recharge of this tributary aquifer is negligible and the dominant direction of flow is the stream direction. *Fifth*, where there is a basin-fill connection between saturated zones of the floodplain Holocene alluvium and a saturated zone of basin fill, the boundary of the "subflow" zone must be 100 feet inside of the connecting zone so that the hydrostatic pressure effect of the basin-fill's side discharge is overcome and the predominant direction of flow of all of the "subflow" zone is the same as the stream's directional flow. *In re the General Adjudication of all Rights to Use Water in the Gila River System and Source*, 9 P.3d 1069, 1074 (Ariz. 2000) (*Gila II*) (quoting trial court's June 30, 1994 order).

On the basis of these criteria, the trial court gave a name to the subflow zone – the "saturated floodplain Holocene alluvium."

Following issuance of the trial court's order, numerous parties once again petitioned the Arizona Supreme Court for interlocutory review of these criteria. The Supreme Court accepted review, approved the criteria, and affirmed the trial court's order "in all respects." *Id.* at 1083. The Court concluded on that same page:

ADWR Determination

De Minimus Rule

> The subflow zone is defined as the saturated floodplain Holocene alluvium. DWR [Arizona Dept. of Water Resources], in turn, will determine the specific parameters of that zone in a particular area by evaluating all of the applicable and measurable criteria set forth in the trial court's order and any other relevant factors. All wells located within the lateral limits of the subflow zone are subject to the adjudication. In addition, all wells located outside the subflow zone that are pumping water from a stream or its subflow, as determined by DWR's analysis of the well's cone of depression, are included in this adjudication. Finally, wells that, though pumping subflow, have a de minimus effect on the river system may be excluded from the adjudication based on rational guidelines for such an exclusion as proposed by DWR and adopted by the trial court.

Pending Litigation

After the Court remanded the subflow issue once again, the trial court evaluated tests designed to implement the *Gila IV* decision. Litigation over the meaning of the criteria and the validity of the proposed tests continues at this time, with yet another petition for interlocutory review currently pending before the Court. When and how this issue will be resolved cannot be guessed at this time.

ARIZONA'S GROUNDWATER MANAGEMENT ACT

Overview

GWA of 1980

The Groundwater Management Act of 1980 enacted a comprehensive statutory scheme to regulate groundwater rights and uses in Arizona. The major components of the Act are codified as the Arizona Groundwater Code (Code) in Title 45, Article 2 of the Arizona Revised Statutes (A.R.S.). The Code occupies more than 120 pages of single-spaced text in a volume of water law statutes published by the State Bar of Arizona. The Code addresses a broad range of issues relating to withdrawal and use of groundwater in Arizona.

"Active Management Areas"

Most of the regulatory provisions of the Code apply only within the five "Active Management Areas" (AMAs) of the State. When originally established in 1980, these AMAs were intended to encompass the areas of the State where the most significant groundwater uses were occurring and where the threat of groundwater overdraft was greatest. The Groundwater Management Act established four initial AMAs, surrounding the Phoenix metropolitan area (Phoenix AMA), the Tucson metropolitan area (Tucson AMA), the Prescott area (Prescott AMA), and an area of large-scale agricultural production between Phoenix and Tucson (Pinal AMA). In 1994, the Legislature created the Santa Cruz AMA, the State's fifth AMA, by splitting off the southern portion of the original Tucson AMA.

Within these five AMAs, most of the detailed regulatory requirements of the Code apply. The Code also contains provisions allowing creation of subsequent AMAs should hydrologic conditions and expanding groundwater uses justify doing so. Subsequent AMAs may either be created by determination of the Director of the Arizona Department of Water Resources (ADWR) or by local initiative of residents within a groundwater basin. To date, no subsequent AMAs have been created by either method. However, with increasing development now occurring outside the five existing AMAs, creation of one or more subsequent AMAs could occur within the foreseeable future.

Arizona Groundwater

Grandfathered GW Rights

IGR Limits

Retiring Irrigation Acres

Non-Irrigation Rights

Flexibility

Three Exceptions

"Service Areas"

Allowable Expansion

Groundwater Rights within AMAs

As a general matter, and with only a few narrow but important exceptions, groundwater uses within AMAs are determined by historic use of groundwater during the five year period prior to creation of the AMA. These types of rights are referred to as "grandfathered" groundwater rights. There are three kinds of grandfathered groundwater rights: Irrigation Grandfathered Rights; Type 1 Non-Irrigation Grandfathered Rights; and Type 2 Non-Irrigation Grandfathered Rights.

Irrigation Grandfathered Rights

Irrigation Grandfathered Rights (IGRs) are created pursuant to A.R.S. § 45-465. IGRs are created for lands that were being irrigated at any time within the five years prior to creation of the AMA. These rights are appurtenant to the lands that were irrigated (irrigation acres) and the groundwater pumped pursuant to an IGR may not be transported for use on other lands. The quantity of water that may be used on the irrigation acres is determined by ADWR pursuant to a formula set forth in Section 45-465, subject to additional conservation measures imposed by ADWR through a series of decade-long management plans (described below).

Type 1 Rights

Type 1 Non-Irrigation Grandfathered Groundwater Rights (Type 1 Rights) are created pursuant to A.R.S. §45-463 (for lands retired from irrigation prior to creation of the AMA) or §45-469 (for lands retired from irrigation after creation of the AMA). Type 1 Rights are created by permanently retiring irrigation acres from agriculture. Upon submittal to and approval by ADWR of a development plan, the water right is converted to a non-irrigation use at a quantity of three acre-feet per retired irrigation acre. Thereafter, the groundwater may be used for non-irrigation purposes. The Groundwater Code includes complicated rules that determine where and how Type 1 groundwater can be used, depending on whether the original owner of the IGR or a subsequent owner is making use of the water.

Type 2 Rights

Type 2 Non-Irrigation Grandfathered Groundwater Rights (Type 2 Rights) are rights established based on historic use of groundwater for non-irrigation purposes. For example, Type 2 Rights have been established for pre-AMA use of groundwater for industrial purposes, power plants, mining activities, dairy operations and large-scale watering of turf facilities (*e.g.* golf courses). Type 2 Rights are established pursuant to A.R.S. § 45-464. Generally, Type 2 Rights may be used for any non-irrigation use anywhere within the same AMA in which the original right was created. The only limitations on new uses apply to Type 2 Rights originally granted for electrical energy generation or for mineral extraction and processing. Such rights may only be used for the original purpose for which they were granted (*i.e.*, either power generation or mineral extraction/processing). A.R.S. § 45-471(A). A Type 2 Right (including those granted for power production or mining purposes) may also be sold (in its entirety) or leased (either all or part of a right) and the point of withdrawal can be designated as any well within the AMA. As a result, these are very flexible rights and they have an established market value within each AMA.

Non Grandfathered Groundwater Rights in AMAs

There are three significant exceptions to the general rule that groundwater rights within AMAs are based on "grandfathered" water uses prior to creation of the AMA. The first exception authorizes cities, towns, private water companies and irrigation districts to pump groundwater and serve customers within their "service areas." These service area rights are governed by the provisions of Article 6 of the Code (A.R.S. § 45-491 *et seq*.). The second exception authorizes issuance of groundwater withdrawal permits for specific purposes within AMAs. Finally, exempt wells serving limited non-irrigation uses may be drilled within AMAs. Each of these categories of groundwater rights will be discussed below.

Service Area Rights

Cities, towns and private water companies in Arizona may withdraw and transport groundwater within their service areas and deliver it to landowners and residents within those service areas pursuant to A.R.S. § 45-492. Transportation of groundwater, however, is subject to the transportation provisions of Articles 8 and 8.1 of the Code (discussed below). In addition, uses of water by landowners and residents are subject to conservation requirements imposed by ADWR through the management plans published for each AMA. Unlike grandfathered groundwater rights, service area rights are allowed to expand (both in geographic area and in quantity of water) to serve growing populations of residents. *See* A.R.S. § 45-493. A city, town or private water company may not, however, expand its service area primarily to include a well field within the service area, to add a disproportionately large industrial customer, or to include irrigation acres for purposes of converting from irrigation to non-irrigation uses. *Id.*

Arizona Groundwater

New GW Use

Exempt Wells

Limits

"Safe-Yield"

"Planned Depletion"

Decline Prevention

Conservation Measures

ADWR Plans

Irrigation districts also may withdraw and transport groundwater within their service areas and deliver it to landowners within those service areas pursuant to A.R.S. § 45-494. As with city, town and private water company service area rights, these activities are subject to the transportation provisions of Articles 8 and 8.1 of the Groundwater Code and to conservation requirements imposed by ADWR through its management plans.

Groundwater Withdrawal Permits

Under certain circumstances, ADWR may issue (and in some cases "shall" issue) groundwater withdrawal permits to allow new groundwater uses within AMAs. Withdrawal permits are available for: (i) dewatering in connection with mining activities; (ii) mineral extraction and processing activities; (iii) general industrial uses; (iv) withdrawals of poor quality groundwater; (v) temporary groundwater withdrawals for electrical generation purposes; (vi) temporary dewatering for construction purposes or to ensure structural integrity of improvements; (vii) drainage of irrigated lands to prevent water logging; and (viii) hydrologic testing purposes.

Exempt Wells

The third significant type of non-grandfathered groundwater right available within AMAs is the right to pump groundwater from "exempt wells." These are wells having a pump capacity of 35 gallons per minute or less. A.R.S. § 45-454. A landowner may drill such a well after submitting to ADWR a "notice of intention to drill." Water from exempt wells may only be used for non-irrigation purposes, including domestic, stock watering, commercial and small-scale industrial uses. Domestic water use from an exempt well may include the application of water to less than two acres of land for purposes of growing crops for human or animal consumption. Uses for purposes other than domestic or stock watering are limited to not more than ten acre-feet per year. *Id.*

Groundwater Management Requirements within AMAs

With the exception of groundwater withdrawn from exempt wells, groundwater uses within AMAs are generally subject to water conservation and management standards promulgated by ADWR pursuant to Article 9 of the Code (A.R.S. § 45-561 *et seq.*). This article first establishes a specific "management goal" for each AMA in the State. For the Phoenix, Tucson and Prescott AMAs, the management goal is "safe-yield"— defined by the Code as "a groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area." A.R.S. § 45-561(12). Safe-yield in the Phoenix, Tucson and Prescott AMAs is to be achieved by 2025. A.R.S. § 45-562(A).

For the Pinal AMA, the management goal is to "allow development of non-irrigation uses...and to preserve existing agricultural economies...for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses." A.R.S. § 45-562(B). This is often referred to as a goal of "planned depletion" because it allows continued access to groundwater for both irrigation and increasing amounts of non-irrigation uses while water tables in parts of the AMA continue to decline. With residential development now rapidly increasing in the Pinal AMA (the area between Phoenix and Tucson), ADWR has begun to evaluate how to ensure that this management goal can be met for the long term.

Finally, the management goal for the Santa Cruz AMA is to "maintain a safe-yield condition...and to prevent local water tables from experiencing long-term declines." A.R.S. § 45-562(C).

Groundwater Management Plans

To ensure progress toward the management goals for each AMA, ADWR is required to publish a series of management plans that impose water conservation measures on groundwater users in each AMA. *See* A.R.S. § 45-562—568. Each management plan governs a period of ten years, except for the fifth management plan, which will apply to the years 2020 through 2025, when the Phoenix, Tucson and Prescott AMAs are to achieve their safe-yield goals. For each plan, ADWR is required to impose: (i) irrigation water duties for agricultural users; (ii) conservation requirements for all non-irrigation groundwater users, including industrial users (which must be based on the "latest commercially available conservation technology consistent with reasonable economic return"); (iii) reductions in per capita water use by municipal groundwater users; and (iv) "economically reasonable conservation requirements for the distribution of water" by cities, towns, private water companies and irrigation districts. *Id.* ADWR is currently imposing the standards promulgated in the third management plan for each AMA. The fourth management plans will be developed between now and 2010.

Arizona Groundwater

Assuring Supply

Designated Providers

Renewable Supplies

Replenishment Fee

Aquifer Storage

Facilities Permits

Facilities Operations

Groundwater "Savings"

Storage Credits

Assured Water Supply Requirements

One of the most important functions ADWR serves within AMAs is to administer the Assured Water Supply program. This program is mandated by A.R.S. § 45-576. Under this program real estate developments involving subdivision of land into six or more lots are required to demonstrate that they have secured the necessary water supplies to serve all current and future water demands of the development for a period of 100 years. ADWR has promulgated detailed regulations to implement this requirement (Arizona Administrative Code, Title 12, Chapter 15, Article 7). A development may make the required demonstration in one of two ways — either by obtaining a "commitment to serve" from a "designated" water provider (city, town or private water company), or by submitting the necessary information to obtain a "certificate of assured water supply" specific to the individual development.

Cities, towns and private water companies can become "designated" by demonstrating that they have sufficient supplies of water physically, legally and continuously available to meet the current and committed water demands within their service areas. Certificate applicants must make the same demonstration for an individual development. In addition, the sources of water — for both designated providers and certificate applicants — must be primarily renewable supplies such as surface water, Central Arizona Project water, effluent, or water previously stored underground that qualifies for long-term storage credits (discussed below). Only limited quantities of groundwater are allowed to be part of the water supply to ensure that new development does not inhibit the ability to achieve the management goal for each AMA.

One of the innovative ways created by the legislature to allow municipal providers and certificate applicants to demonstrate consistency with the management goal for the Phoenix, Tucson and Pinal AMAs is the establishment of the Central Arizona Groundwater Replenishment District (CAGRD). Interested parties may enroll either a municipal service area or an individual development in the CAGRD. Following enrollment, any "excess groundwater" (*i.e.*, groundwater exceeding amounts deemed consistent with the management goal for each AMA) pumped to serve the enrolled area is subject to payment of a replenishment fee. This fee is then used by CAGRD to secure and store underground (*i.e.*, replenish) an equivalent quantity of renewable water supplies. The current replenishment fees for these activities exceed $200 per acre-foot of water subject to the replenishment obligation and are expected to rise steadily in future years as available renewable supplies become fully utilized.

Underground Storage of Non-Groundwater Supplies

Another innovative program enacted by the Arizona Legislature allows parties to store renewable water supplies in underground aquifers and thereby earn "long-term storage credits" that can later be recovered for future use. During the years this program has existed, various entities in the State of Arizona have stored more than four million acre-feet of renewable water supplies in underground aquifers. The vast majority has been Central Arizona Project water imported from the Colorado River, but significant and growing quantities of effluent, and limited quantities of in-state surface water have also been stored.

The underground storage program is authorized by Chapter 3.1 of Title 45 of the Arizona Revised Statutes (A.R.S. § 45-801.01 *et seq.*). Interested parties may apply to ADWR for a permit to store water in "underground storage facilities" or "groundwater savings facilities." The facilities themselves are subject to a separate storage facility permit requirement because often one party will hold a storage facility permit, but contract with multiple additional parties to allow storage of varied water supplies at the facility. Finally, a third permit is required to subsequently recover the stored water for future use ("recovery well permits").

The two types of facilities where storage may occur operate in very different ways. "Underground storage facilities" are locations where water is physically placed into an aquifer, either through infiltration basins or injection wells. Storage facilities may either be constructed facilities (*e.g.*, basins or wells constructed in a location allowing efficient infiltration of water to the aquifer) or "managed underground storage facilities" that are "designed and managed to utilize the natural channel of a stream to store water underground" (A.R.S. § 45-802.01(12)). This latter category of facility allows permit holders to discharge water into normally dry riverbeds and allow infiltration to the underlying aquifer without the expense of constructing and maintaining infiltration basins or injection wells.

In contrast, "groundwater savings facilities" are locations — usually the service areas of irrigation districts — where groundwater would normally be pumped pursuant to irrigation grandfathered rights or other rights to withdraw groundwater within an AMA. In such locations, permits may be granted where the applicant demonstrates that "groundwater withdrawals are eliminated or reduced by recipients who use in lieu water on a gallon-for-gallon substitute basis for groundwater that otherwise would have been pumped from within that active management area" (A.R.S. § 45-802.01(8)). In essence, the operator of the groundwater savings facility agrees to reduce groundwater pumping and instead use the renewable water supplies provided by a third party. In return, the third party may earn long-term storage credits for later use

Arizona Groundwater

in a quantity equivalent to the amount of water delivered to the facility operator (minus, in most cases, a 5% "cut to the aquifer").

Aquifer "Out"

Long-term storage credits may be earned for underground storage if the requirements of A.R.S. § 45-852.01 are satisfied. This statute requires that, to qualify for long-term storage credits, the stored water must be "water that cannot reasonably be used directly." In-state surface water (*i.e.*, not Central Arizona Project water) generally will not qualify because infrastructure already exists to make direct use of most of this resource. Central Arizona Project water usually will qualify as "water that cannot reasonably be used directly," but only in amounts that exceed the amount of groundwater being pumped in the year of storage by the party holding the storage permit. A.R.S. § 45-802.01(22). Effluent is defined by statute as "water that cannot reasonably be used directly" until 2025. *Id.*

Long-Term Credits

Section 45-852.01 provides a general rule that 95% of most stored water will be eligible for long-term storage credits, with the remaining 5% being considered a benefit to overall aquifer conditions. Exceptions to this general rule include: (i) water that is recovered from the aquifer in the same year it was stored (no credits are earned); (ii) effluent stored in a managed underground storage facility that has "not been designated at the time of storage as a facility that could add value to a national park, national monument or state park" (in which case only 50% of the stored water will qualify for long-term storage credits); (iii) water stored at a groundwater savings facility where the operator fails to demonstrate that it reduced groundwater consumption on a gallon-for-gallon substitute basis for the quantity of in lieu water received (credits may be earned only to the extent groundwater consumption was actually reduced); and (iv) effluent stored in facilities other than managed storage facilities that are not designated as providing added value to a national park, national monument or state park (which qualifies for 100% credit). *Id.*

Transfer of Credits

Once earned, long-term storage credits may be used to establish an assured water supply for industrial purposes, or for any other purpose for which the stored water could have been used prior to storage. In addition, long-term storage credits may be transferred "by grant, gift, sale, lease or exchange" to third parties. A.R.S. § 45-854.01(A). ADWR, however, may reject a transfer if the transferee would not have qualified to earn the long-term storage credits in the year they were earned. A.R.S. § 45-854.01(C).

GROUNDWATER REGULATION OUTSIDE AMAs

Limited Regulation

Outside the State's five existing AMAs, groundwater is subject to only limited regulation. Specifically, the Code provides only that "a person may:

1. Withdraw and use groundwater for reasonable and beneficial use, except as provided in [the groundwater transportation statutes of Article 8.1].
2. Transport groundwater pursuant to articles 8 and 8.1 [of the Groundwater Code]." A.R.S. § 45-453.

Transport Law

Article 8 of the Code provides general rules for, and limitations on, the transportation of groundwater within a groundwater basin or away from an AMA. Article 8.1 governs transportation of groundwater from outside an AMA into an AMA. These provisions substantially liberalized the right of landowners to pump groundwater and transport it away from the site of pumping for use in other locations. In all other respects, the common law doctrine of reasonable use applies to withdrawal and use of groundwater outside AMAs.

Groundwater Transportation Provisions of the Groundwater Code

AMA Transport

Portions of the groundwater transportation provisions of Article 8 of the Code apply to groundwater transportation within an AMA. *See* A.R.S. § 45-541 through 45-543. The general rule within AMAs is that groundwater may be transported within a "sub-basin" of an AMA "without payment of damages." A.R.S. § 45-541(A). In contrast, most permissible transportation of groundwater across sub-basin boundaries of an AMA, or transportation away from an AMA, will be subject to payment of damages. A.R.S. §§ 45-542, 45-543.

Outside AMAs

Other sections of Article 8 of the Code specifically apply to transportation of groundwater outside of AMAs. The general rules in such areas are contained in A.R.S. § 45-544(A):

- Groundwater may be transported "[w]ithin a subbasin of a groundwater basin or within a groundwater basin, if there are no subbasins, without payment of damages"
- Groundwater may be transported between subbasins of a groundwater basin "subject to payment of damages"
- Groundwater "may not be transported away from a groundwater basin."

Exceptions Limited

Subsections B through D of Section 45-544 provide limited exceptions to the ban on transportation of groundwater away from a basin, primarily to accommodate specific transportation activities that were occurring at the time the Section was enacted.

In all cases of transportation that are "subject to payment of damages" the rules for determining damages are set forth in A.R.S. § 45-545. This statute provides that "neither injury to nor impairment of

Arizona Groundwater

Damages Rules

Transport Into AMAs

Outside AMAs

Groundwater Supply

the water supply of any landowner shall be presumed from the fact of transportation." It also expressly requires the court to "consider all acts of the person transporting groundwater toward the mitigation of injury" when determining whether there has been injury and, if so, the extent of any damages. A.R.S. § 45-545(B).

Article 8.1 of the Groundwater Code governs withdrawals of groundwater in non-AMA groundwater basins for purposes of importation into an AMA. For such withdrawals, the general rule is that groundwater may not be imported into an AMA unless it is expressly permitted by a particular section of Article 8.1. *See* A.R.S. § 45-551(B). The remaining sections of Article 8.1 provide specific, generally narrow, exceptions to the prohibition against transportation into an AMA.

Adequate Water Supply Program

The only significant regulatory program administered by ADWR outside the State's AMAs is the Adequate Water Supply program. This program is mandated by A.R.S. § 45-108 and is implemented through regulations promulgated by ADWR. The regulations are structured in a manner very similar to the Assured Water Supply program described above. As with that program, cities, towns and private water companies can become designated providers by demonstrating that they have sufficient water supplies physically, continuously and legally available for a 100-year period to meet current and committed demand. *See* A.R.S. § 45-108(C). Similarly, developers may request a water adequacy report for an individual subdivision that will not be supplied by a designated municipal provider.

There are two significant differences between the Assured Water Supply program and the Adequate Water Supply program. First, because the Adequate Water Supply program applies only outside AMAs, a designated provider or a developer seeking a water adequacy report for a subdivision may rely entirely on groundwater as the source of supply. There are no safe-yield management goals in these areas, so access to non-renewable groundwater supplies is not currently restricted. Second, a developer that fails to demonstrate an adequate water supply to the satisfaction of ADWR may nevertheless sell lots within the development, but must disclose the lack of adequate water supply in promotional materials for those sales. *See* A.R.S. § 45-108, § 32-2181(F).

CONCLUSION

Arizona has a unique mix of common law and statutory provisions governing the withdrawal and use of groundwater. The common law governs conflicting claims to groundwater supplies among neighboring landowners (the doctrine of reasonable use) and conflicts between surface water users and groundwater users (subflow issues). The statutory provisions authorize ADWR to regulate withdrawal and use of groundwater as a public resource. The extent of such regulation varies dramatically depending on whether the groundwater is used in one of the State's five AMAs or in other parts of the State. In addition to regulating groundwater use, Arizona has enacted a number of statutory programs designed to augment and replenish groundwater supplies. Together, the common law and statutory and regulatory programs enable Arizona to rely on groundwater as an essential component of the State's long-term water supplies.

For Additional Inform ation: Bill Staudenmaier, 602/ 440-4830 or email: wstaudenmaier@rcalaw.com; ADWR website: www.azwater.gov/dwr/

Bill Staudenmaier joined Ryley Carlock & Applewhite in 1998. Mr. Staudenmaier's water law practice involves general stream adjudications, participation in negotiations for settlement of Indian water right claims, negotiation of contracts and leases for transfer of water and water rights, obtaining permits and approvals from state and federal regulatory agencies, and work concerning state and federal water resources legislation. Mr. Staudenmaier's environmental practice includes compliance counseling regarding state and federal hazardous and solid waste laws, legal advice concerning environmental release reporting and remediation requirements, due diligence counseling on environmental issues associated with real estate transactions, and legal advice concerning Aquifer Protection Permit and Clean Water Act issues. He received his B.S. from the University of Wisconsin, where he majored in Forestry and Soil Science, and his J.D. from the University of Michigan. Prior to joining Ryley Carlock & Applewhite, Bill was a Senior Attorney for Arizona Public Service Company from 1992 to 1998; Deputy Counsel for the Arizona Department of Water Resources from 1990 to 1992; an associate at Streich, Lang, Weeks & Cardon from 1988 to 1989 and law clerk to Judge Richard P. Matsch of the Federal District Court, District of Colorado, from 1987 to 1988.

WATER BRIEFS

PLATTE RIVER PROGRAM NE
ESA INTERIOR AGREEMENT

On September 28, Secretary of the Interior Dirk Kempthorne signed off on a proposed Platte River Recovery Implementation Program, approving Interior's participation in a $300 million, basin-wide effort to improve habitat for four threatened and endangered species that use the Platte River in Nebraska. Kempthorne signed the Record of Decision (ROD) for the Final Environmental Impact Statement (FEIS) on the Program. The Governors of Colorado, Nebraska and Wyoming must also sign the agreement to implement the program. On October 30, Governor Dave Heineman of Nebraska wrote a letter to the governors of Colorado and Wyoming, as well as the U.S. Secretary of the Interior, informing them of his intent to sign the agreement. "The program's basin-wide approach offers Nebraska agricultural producers important opportunities for input, provides a measure of regulatory certainty, and clearly protects the future of Panhandle agriculture, while also giving farmers and ranchers some degree of protection from federal action," the Governor wrote.

The Platte River Recovery Implementation Program was formulated by the Platte River Governance Committee, which is made up of representatives of the States of Colorado, Wyoming, and Nebraska, the Bureau of Reclamation (Reclamation), the US Fish and Wildlife Service (USFWS), and water users and environmental groups in the Platte River Basin. The preferred alternative described in the FEIS and approved in the ROD would improve habitat for the target species in the Central Platte Habitat Area (along the Platte River from Lexington to Chapman, Nebraska). Planned actions include: reducing shortages to USFWS's recommended target flows in the central Platte River by about 130,000 to 150,000 acre-feet on an average annual basis (primarily by retiming river flows to improve habitat conditions in the spring, summer, and early fall); leasing or acquiring land in the Central Platte Habitat Area from willing sellers and restoring habitat (focusing primarily on restoration of wet meadow areas and areas of wide unvegetated river channel); and testing the assumption that managing flow in the Central Platte River also improves habitat for the pallid sturgeon in the Lower Platte River.

"The initiative is based on significant scientific research and analysis, including a review and endorsement by the National Academy of Sciences," Kempthorne explained. "By pooling resources and coordinating the restoration effort, the program provides a cost-effective way to meet each water user's obligations under the Endangered Species Act. It removes the uncertainty for water users about what will be required to comply with the ESA for the whooping crane, interior least tern, piping plover, and pallid sturgeon." The ROD included provisions to fund and implement the Program under the auspices of Reclamation and USFWS, in cooperation with the States of Wyoming, Colorado, Nebraska and other participants, subject to required congressional authorization and appropriations.

The Program will begin when the implementing agreement is signed by the state governors, and Federal authorizing and funding legislation is enacted. The federal government will provide half the funding necessary for the Program; the other half will be contributed by the three states through non-federal funds, water and lands. The estimated total value of these cash and cash-equivalent contributions over the first 13-year increment of the Program is about $317 million.

For info: Frank Quimby, Interior, 202/ 208-7291

ROD and other Platte River Recovery Implementation Program documents at the Platte River Endangered Species Partnership's website: www.platteriver.org.

TRIBAL CWA AUTHORITY CA
WATER QUALITY DELEGATION

The US Environmental Protection Agency (EPA) announced on October 31st its approval of the Twenty-Nine Palms Band of Mission Indian's application to administer federal Clean Water Act programs on tribal lands. The Twenty-Nine Palms Tribe is the 38th tribe (out of 563 federally recognized tribes) with delegated authority over water quality protection programs to administer water quality standards and a certification program.

The tribe will work with EPA on a government-to-government basis to develop and adopt water quality standards which, once approved, will form the basis for water quality-based effluent limitations and other requirements for discharges to waters within the tribe's jurisdiction. The tribe is also authorized to grant or deny certification for federally permitted or licensed activities that may affect waters within the borders of their lands. In order to be delegated authority under Clean Water Act requirements, the tribe must be federally recognized, have a governing body to carry out substantial governmental duties and powers, have jurisdiction to administer the programs within the boundaries of its reservation, and be reasonably capable of administering the program.

The Twenty-Nine Palms Tribe has a reservation that consists of two properties, in Riverside County in the city of Coachella and in San Bernardino County between Twenty-Nine Palms and Joshua Tree. There are currently no tribal members residing on the reservations but the tribe wants to ensure that present and future beneficial uses of the water bodies on the reservation are protected from degradation.

For info: Mark Merchant, EPA, 415/ 947-4297 or website: www.epa.gov/ region09/indian/index.html

WATER BRIEFS

WATER TRUST FUND — NM

PERMANENT STATUS VOTE

In November, New Mexico voters will choose whether to pass a Constitutional Amendment to make the existing Water Trust Fund a constitutionally protected permanent fund. If passed, the Fund would gain the protection of constitutional status, putting it beyond the reach of future legislative abolishment. The 2006 State Legislature set aside $40 million to put financial strength behind this initiative.

New Mexico State Engineer John D'Antonio explained the purpose of the Water Trust Fund. "The fund will be used to support critically needed projects that preserve and protect New Mexico's water supply. An annual distribution will be made from the fund and the distribution will be appropriated by the legislature for water projects consistent with a state water plan." The Fund would consist of money appropriated, donated, or otherwise accrued to the fund. Money that would be invested by the State Investment Officer as land grant permanent funds are invested, with strict accountability and oversight measures as provided by the State Investment Council to ensure appropriate safety of and return on investments. Earnings from investment of the fund are to be credited to the fund. The State Engineer is the chairman of the Water Trust Board.

Over the past five years, the State Legislature has taken steps to secure a stable source of funding for water projects by providing an annual allocation of Severance Tax Bond proceeds to the Water Project Fund. The Water Project Fund, through the Water Trust Board, recommended more than $21 million in funding in May of 2006 for 25 water projects across the state. Eligible projects from this fund included large infrastructure water supply projects, restoration and management of watersheds, conservation projects, Endangered Species Act collaborative programs, and flood control projects.

For info: Karin Stangl, NM State Engineer's Office, 505/ 827-6139, or website: www.ose.state.nm.us/

SUPERFUND DELISTING — CO

ROCKY MOUNTAIN ARSENAL

EPA has announced the removal of 11.5 square miles of Rocky Mountain Arsenal (RMA) from the National Priorities List (NPL) for Superfund cleanup sites listed under the Comprehensive Environmental Responsibility Compensation and Liability Act (CERCLA). This action will enable the US Army to transfer the property to the Rocky Mountain Arsenal National Wildlife Refuge, more than doubling its size to approximately 19 square miles. The deletion signals that EPA and the State of Colorado have determined that all cleanup actions necessary to protect public health and the environment on the 7,396 acre Internal Parcel have been completed.

Nearly 80 percent of RMA has met cleanup standards and been deleted from the NPL. The Internal Parcel is the fourth and largest partial deletion accomplished since RMA was listed on the NPL in 1987. In January 2003, a 940 acre area known as the Western Tier Parcel was deleted and is now being redeveloped by nearby Commerce City as Prairie Gateway. In January 2004, two areas totaling more than 5,000 acres known as the Select Perimeter Area and the Surface Deletion Area were deleted. Although most of the Internal Parcel is cleaned up, some areas within its boundaries were excluded from deletion. These include certain former processing areas, waste disposal sites, munitions demolition areas, structures, haul roads, and drainage areas. In addition, groundwater in some areas will remain on the NPL and continue to be treated by existing water treatment systems. Cleanup of the remainder of the site is scheduled for completion by 2011.

For info:
Jennifer Chergo, EPA Region 8, 303/ 312-6601

WATER EFFICIENCY — US

LANDSCAPE IRRIGATION
EPA CERTIFICATION

Looking to expand the water efficiency market, EPA has issued its first set of specifications to certify professionals in water efficiency. Under the agency's WaterSense program, the specifications set technical requirements for certifying landscape irrigation professionals. Certification programs that meet the EPA's requirements will earn the WaterSense label.

The programs will test for the ability to design, install, maintain and audit water-efficient landscape irrigation systems, including:

- tailoring systems to the surrounding landscape and local climate conditions
- selecting equipment, laying out irrigation systems, and setting up proper scheduling
- auditing systems that deliver water unequally or inefficiently and recognizing how to improve performance

Adhering to the specifications will allow professionals to become WaterSense certified. They also may use the WaterSense logo to promote their water-efficient landscape and irrigation services to consumers.

WaterSense is a voluntary public-private partnership that identifies and promotes high-performance products and programs that help preserve the nation's water supply. The WaterSense program seeks to generate support for:

- consumer use of water-efficient products such as water-saving faucets
- certification activities for water industry professionals
- innovation in water-efficient product manufacturing

EPA is inviting organizations that share a commitment to water efficiency to become WaterSense partners. Partnership is open to organizations that certify irrigation professionals and those interested in promoting the WaterSense program, such as water utilities and trade associations. In the future, a broad spectrum of water-efficient products will carry the WaterSense label, from lawn irrigation products to bathroom faucets. The companies that manufacture,

WATER BRIEFS

distribute, or sell these products will also soon be eligible for partnership.

For info:
Cindy Simbanin, EPA, 202/ 564-3837 or email: simbanin.cynthia@epa.gov
EPA WEBSITES:
WaterSense: www.epa.gov/watersense
Certification Programs for Irrigation Professionals: www.epa.gov/watersense/partners/specs/cert.htm
Partnership Agreements: www.epa.gov/watersense/partners/join/index.htm

AG DRAINAGE WATER CA
$17.5 MILLION IN GRANTS

California's State Water Resources Control Board (SWRCB) at its October 11 meeting awarded more than $17 million in grants to improve agricultural water quality. The projects proposed focus on reducing pollutants in agricultural drainage water through research, monitoring, treatment, reuse, and drainage improvements. The competitively awarded grants are funded by the state through bonds approved by California voters in 2002 in Propositions 40 and 50. In all, 23 grants were awarded, totaling a little more than $17.5 million. Nine of those grants are in the million dollar range ($999,000 or more).

Following the vote to approve the awards Water Board Chair Tam Doduc observed, "In addition to funding projects throughout the state, a variety of agricultural practices that can be duplicated by other farmers are expected to be developed and refined to improve water quality." Among the goals of the projects are reducing nutrients, sediment, and pathogens draining from livestock facilities; demonstrating the compatibility of water quality and food safety; reducing pesticides and herbicides that run off of orchards; and establishing best water quality management practices for rice growers.
For info:
SWRCB Public Affairs, 916/ 341-5254
SWRCB's WEBSITE: www.waterboards.ca.gov/press/awqgp.html

ECO-INDICATORS WA
EPA WEB-BASED PROGRAM

As part of an ongoing international effort to restore and protect the Puget Sound Georgia Basin, the EPA recently announced the launch of an online indicators report that will provide local citizens, businesses, organizations and governments information about the current health of the ecosystem.

The Puget Sound Georgia Basin Ecosystem Indicators (Indicators) Report is composed of nine environmental indicators specific to this ecosystem: Population Health, Urbanization and Forest Change, Solid Waste and Recycling, River, Stream and Lake Quality, Shellfish, Air Quality, Marine Species at Risk, Toxics in Harbor Seals and Marine Water Quality. Of the nine indicators, five are showing declining conditions and four are neutral. None are showing improvement. The Indicators Report synthesizes data from many partners and establishes a baseline from which to measure either progress or continued decline.

The Indicators build on an initial Puget Sound Georgia Basin ecosystem indicators report produced in 2002. The numerous contributors for both reports include EPA, Environment Canada, Canada Department of Fisheries and Oceans, the Georgia Basin Action Plan, BC Ministry of Environment, Puget Sound Action Team, Washington State Department of Ecology, Washington Department of Fish & Wildlife, and many local government entities and non-governmental organizations.

For info:
Michael Rylko, EPA Reg X, 206/ 553-4014 or email: rylko.michael@epa.gov
EPA websites:
www.epa.gov/region10/psgb/indicators/ (Indicator Report)
www.epa.gov/region10/psgb/indicators/acknowledgements/ (Data on Report Contributors)

ESA TAKE ALLEGED CA
LAWSUIT AGAINST CDWR

Watershed Enforcers, a project of the California Sportfishing Protection Alliance (CSPA) filed a lawsuit on October 4th accusing the California Department of Water Resources (CDWR), its Director, and key CDWR employees of violating the California Endangered Species Act (CESA). The action alleges that CDWR violated CESA by capturing and killing threatened spring-run Chinook salmon, endangered winter-run Chinook salmon and threatened Delta smelt at its South Delta pumping facilities without securing the legally required authorization from the California Department of Fish and Game (CDFG). The Petition for a Writ of Mandate asks the court to order the defendants to either: 1) immediately cease operation of its South Delta pumping plant in a manner that kills fish; 2) procure authorization from the CDFG pursuant to CESA; or 3) show cause why such cessation or authorization is not mandated by CESA. CSPA accuses CDFG and CDWR of conspiring to exempt the State Water Project pumps from having to comply with the CESA. According to CSPA, under CESA, the killing or harming (taking) of listed species may occur only if DFG finds that the taking is consistent with an incidental take statement issued pursuant to the federal Endangered Species Act (ESA) or an incidental "take" permit issued by the Director of CDWR. Unlike the federal ESA, the state's CESA requires that any take authorization must ensure that impacts are: 1) minimized and fully mitigated; 2) required mitigation measures are capable of successful implementation; and 3) adequate funding exists to implement mitigation measures. No permit may be issued if the action will jeopardize the continued existence of a species. The lawsuit is moving rapidly ahead in Alameda Superior Court, with a November 17 hearing date already set.
For info: Michael Lozeau, Watershed Enforcers, 510/ 749-9102; Bill Jennings, CSPA Director, 209/ 464-5067 or email: deltakeep@aol.com

WATER BRIEFS

WATER RESERVES **NM**
WATER RIGHTS ACQUISITION

In 2005, New Mexico's legislature passed a law proposed by Governor Richardson and THINK New Mexico creating the Strategic Water Reserve. The law enables the State to acquire water rights through lease, purchase or donation to help comply with interstate stream compacts or to assist with water management efforts for the benefit of threatened or endangered species. The New Mexico Interstate Stream Commission (Commission) approved the first acquisition of water rights for the New Mexico Strategic Water Reserve and the sale closed on September 15.

The first purchase was for more than 1,790 acre-feet of adjudicated groundwater rights within the Fort Sumner Groundwater Basin. Located just over two miles from the Pecos River, these water rights offer tremendous benefit to the health of the river, according to the State Engineer's Office. The purchase will provide water to help with Endangered Species Act issues on the Pecos River without impairing New Mexico's ability to comply with the Pecos River Compact. The water will also be a credit towards the 18,000 acres of land and appurtenant water rights the State is directed to purchase under the Pecos River Settlement Agreement. "This acquisition will be enormously valuable in the effort to protect the Pecos bluntnose shiner," said Commission Director Estevan Lopez. "This water will be available for lease to the Bureau of Reclamation for direct delivery to the river roughly five miles upstream of the area designated under the Endangered Species Act as a critical habitat for the shiner."

The Commission adopted rules and regulations in December 2005 to implement the new law. In February 2006, they established priority areas throughout the state for acquisitions, including the Pecos River Basin.

Mr. and Mrs. Richard Vaughan represented their family (sellers) in the transaction. The Vaughan family has owned land in the Fort Sumner area for three generations. Richard Vaughan is a board member of the New Mexico Farm and Livestock Bureau, and is also an original member of the Lower Pecos River Basin Committee formed in 2001.

For info:
Karin Stangl, NM State Engineer's Office, 505/ 827-6139
WEBSITE: www.ose.state.nm.us/

DRINKING WATER **US**
UNDERGROUND SOURCE RISKS
EPA RULE

A new rule issued recently by EPA targets utilities that provide water from underground sources and requires greater vigilance for potential contamination by disease-causing microorganisms.

THE RULE PROVIDES FOR:

- regular sanitary surveys of public water systems to look for significant deficiencies in key operational areas
- triggered source-water monitoring when a system that does not sufficiently disinfect drinking water identifies a positive sample during its regular monitoring to comply with existing rules
- implementation of corrective actions by groundwater systems with a significant deficiency or evidence of source water fecal contamination
- compliance monitoring for systems that are sufficiently treating drinking water to ensure effective removal of pathogens

A groundwater system is subject to triggered source-water monitoring if its treatment methods don't already remove 99.99 percent of viruses. Systems must begin to comply with the new requirements by December. 1, 2009.

Contaminants in question are pathogenic viruses—such as rotavirus, echoviruses, noroviruses—and pathogenic bacteria, including E. coli, salmonella, and shigella. Utilities will be required to look for and correct deficiencies in their operations to prevent contamination from these pathogens.

Microbial contaminants can cause gastroenteritis or, in rare cases, serious illnesses such as meningitis, hepatitis, or myocarditis. The symptoms can range from mild to moderate cases lasting only a few days to more severe infections that can last several weeks and may result in death for those with weakened immune systems. The new groundwater rule will reduce the risk of these illnesses.

Fecal contamination can reach groundwater sources, including drinking water wells, from failed septic systems, leaking sewer lines, and by passing through the soil and large cracks in the ground. Fecal contamination from the surface may also get into a drinking-water well along its casing or through cracks if the well is not properly constructed, protected, or maintained.

The Center for Disease Control and Prevention reports that, between 1991 and 2000, groundwater systems were associated with 68 outbreaks that caused 10,926 illnesses. Contaminated source water was the cause of 79 percent of the outbreaks in groundwater systems.

For info, contact: Veronica Blette, EPA, 202/ 564-4094 or email: blette.veronica@epa.gov

EPA WEBSITE: www.epa.gov/safewater/disinfection/gwr

WQ TRADING **US**
USDA/EPA PARTNERSHIP
MODEL PROGRAM

Mark Rey, Under Secretary for the US Department of Agriculture (USDA) Natural Resources and Environment section and Benjamin Grumbles, Assistant Administrator of EPA's national Office of Water, recently signed a partnership agreement to establish and promote water quality credit trading markets through cooperative conservation. The agreement features a pilot project within the Chesapeake Bay basin to showcase the effectiveness of environmental markets.

"Water quality credit trading is a flexible, cost-effective approach for implementing conservation practices

WATER BRIEFS

that reduce runoff, help producers meet water quality standards, and pursue water quality improvement goals in watersheds," Rey said. "We believe that voluntary, incentive based approaches are the most effective way to achieve sound resource management and conservation on private lands."

"Trading for upgrading water quality is the wave of the future," said Grumbles. "We are committed to giving good stewards credit and partnering with agriculture to accelerate restoration and protection. This agreement is a big step forward."

Water quality credit trading uses a market-based approach that offers incentives to farmers and ranchers who implement conservation practices that improve water quality. While reducing pollution, they can earn credits they can trade with industrial or municipal facilities that are required by the federal Clean Water Act and other laws to reduce the amounts of pollution in wastewater.

Allowing the market to determine the price-per-credit by using the principle of supply and demand offers incentives that generate interests among a greater number of participants, which will expand conservation practices to more acres of agricultural lands. Private sector water quality markets complement existing federally supported conservation efforts by creating additional revenue streams for water quality improvement.

For info: Peter Fullerton, USDA, 202/ 720-1163; Dale Kemery EPA, 202/ 564-4355 or emai; kemery.dale@epa.gov

EPA WEBSITE: www.epa.gov/ waterqualitytrading (Water Quality Trading Agreement & Water Quality Trading)

USDA website: www.nrcs.usda.gov/about/strategicplan/ (Market-Based Approach & NRCS Strategic Plan)

CHILOQUIN DAM REMOVAL OR SUCKER IMPROVEMENT IN 2006

A ceremony was held on October 19 to sign a Cooperative Agreement between the Bureau of Indian Affairs (BIA) and the Modoc Point Irrigation District (MPID) to remove Chiloquin Dam, which is located on the Sprague River near the city of Chiloquin, Oregon. In addition to calling for the removal of the dam, the Agreement will define the roles of BIA and MPID in planning and constructing MPID's electrically-powered pump plant. It also provides $2.475 million to MPID for mitigation related to the impact of dam removal.

Chiloquin Dam was built by the US Indian Service between the years 1914 and 1918 to establish an irrigation project for the Klamath Tribes. As a result of Congress terminating the Tribes' status in 1954, the United States transferred ownership of the dam in 1973 to MPID, a non-federal entity. The dam provides MPID with its primary source of irrigation water. In 1988, the US Fish and Wildlife Service (USFWS) determined that both the Shortnose and Lost River Suckers fish were endangered species. USFWS concluded that Chiloquin Dam was a major factor in limiting the species recovery and contributing to their decline.

In March, 2002, President Bush created the Klamath River Basin Federal Working Group consisting of the Secretaries of Interior, Agriculture, and Commerce, and the Chairman of the Council on Environmental Quality to advise the President on long-term solutions to enhance water quality and quantity, and to address other complex issues in the Klamath River Basin.

After various studies including an Environmental Assessment, the Interior Department selected dam removal as the preferred alternative because it provided the highest certainty of improving passage above the dam into spawning habitats in the Sprague River. After negotiations, MPID and the Department agreed that the best solution would be for the Interior to remove Chiloquin Dam and construct an electric pump plant to provide irrigation water currently provided by the dam.

Meanwhile, the Bureau of Reclamation (Reclamation) and USFWS announced on October 31 that this year's production of larval and juvenile suckers in the Upper Klamath River Basin is the highest since standardized sampling by Federal resource agencies began 12 years ago. In August 2006, the Klamath Project's A-Canal Fish Screen and Bypass Facility, at the southern end of Upper Klamath Lake, returned up to 4,000 juvenile suckers per hour to the lake, a significant increase in recruitment compared to recent years.

Upper Klamath Lake is the primary habitat for the shortnose and Lost River suckers. Federal biologists believe several factors may help explain the large increase of suckers in 2006, including: wet winter and spring conditions; a cooler-than-average August; and a reduced number of fathead minnows in Upper Klamath Lake this summer, a known predator of larval suckers. While it is uncertain precisely what conditions are necessary for good survival of juvenile suckers into adulthood, biologists are cautiously optimistic that 2006's improved juvenile production numbers created a good foundation for a measurable growth of the adult population in the future.

Water quality conditions in the Upper Klamath River Basin were also better in 2006 than in the previous 3 years. Based on comparisons of water quality conditions recorded in the mid-northern area of Upper Klamath Lake where most adult suckers spend the summer, water temperatures were lower in 2006 than they had been in previous years, while the concentration of dissolved oxygen was higher. Annual precipitation was also 30 percent higher in 2006 than in recent years, contributing to improved water quality conditions in the Basin.

For info:
Pablo Arroyave, Reclamation, 541/ 880-2544 or email: parroyave@mp.usbr.gov; Additional info on Reclamation's Klamath Project on Reclamation's website: www.usbr.gov/mp/kbao/

WATER BRIEFS

TRIBAL WATER QUALITY US

EPA GRANTS / GUIDANCE

NPS Grants

EPA plans to award $7 million in grants to eligible Tribes for **n**on**p**oint **s**ource (NPS) pollution programs. The grants, awarded under Section 319(h) of the Clean Water Act, will help Tribes implement their approved NPS management programs to control polluted runoff. A portion of the funding will be distributed competitively to develop and implement watershed-based plans and other projects that result in a significant step towards solving NPS impairments. The remaining funds will be distributed to all eligible tribes for education programs, protection activities, and implementing watershed projects. EPA is also releasing national guidelines for the award of this base-grant funding. EPA expects funds will be similar to those distributed in FY 2006, which included approximately $3.8 million awarded to 28 tribes and $3.2 million in base grants awarded to 95 tribes. NPS pollution, unlike pollution from industrial and sewage treatment plants, comes from many sources and is caused by rainfall or snow melt moving over and through the ground. The runoff picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground water sources. Applications for the funding must be received by Dec. 19, 2006.

Tribal WQ Program Guidance

A new EPA publication will help Indian tribes design and implement successful water quality programs. The *Guidance on Awards of Grants to Indian Tribes* sets goals and requirements for grant recipients and provides a framework for evaluating program results. The guidelines will help redefine how tribes implement the Clean Water Act. During the past 10 years, EPA has increased funding for the grants from $3 million to $25 million a year. Many tribes have implemented successful water quality programs under these grants. The guidance is intended to serve as a one-stop reference for major water quality activities. It will increase uniformity in program management nationally while providing tribes with the flexibility to adapt to local situations. It will also help improve the quality and access to data on the results of the grant investments. Reporting requirements and data management expectations for all tribal programs are key components of this guidance. Data collected as a result of these requirements will help EPA measure results and comply with the Government Performance and Results Act and other federal mandates.

For info: Lena Ferris, EPA, 202/ 564-8831 or email: ferris.lena@epa.gov
REQUEST FOR PROPOSALS: www.grants.gov/search/search.do?oppId=11280&mode=VIEW
NATIONAL GUIDELINES: www.epa.gov/owow/nps/tribal
ADDITIONAL INFORMATION: www.epa.gov/owm/cwfinance/106tgg07.htm

CALENDAR

Please Note: An extended Calendar containing ongoing updates is available on The Water Report's website: www.thewaterreport.com. Subscribers are encouraged to submit calendar entries, email: thewaterrepot@hotmail.com

Also Note: The entry for the **American Water Resources Association (AWRA) – Annual Washington State Section Meeting in Seattle** has been corrected to read **November 16**.

November 14 CA

Groundwater Banking Guidelines for Central Valley Project Water, Bureau of Reclamation Workshop, Maxwell, Maxwell Inn, 81 Oak Street, 1pm-4pm. RE: Reclamation is Developing of Groundwater Banking Guidelines To Provide Criteria Under Which CVP Participating Districts Can Participate in Groundwater Banking Programs Outside Their Contract Service Areas. For info: Joel Zander, Reclamation, 916/ 978-5270 or email jzander@mp.usbr.gov; or Lucille Billingsley, Reclamation, 916/ 978-5215 or email lbillingsley@mp.usbr.gov

November 15 CA

Groundwater Banking Guidelines for Central Valley Project Water, Bureau of Reclamation Workshop, Sacramento, Federal Building, 2800 Cottage Way, Room C1003, 1pm-4pm. RE: See Above Calendar Entry. For info: Joel Zander, Reclamation, 916/ 978-5270 or email jzander@mp.usbr.gov; or Lucille Billingsley, Reclamation, 916/ 978-5215 or email lbillingsley@mp.usbr.gov

November 15 CA

Klamath Hydroelectric Project: DEIS Meeting, Yreka, Yreka Community Theatre, 812 North Oregon Street, 9am-12noon and 7-10 pm. RE: Comments & Recommendations on the DEIS. For info: John Mudre, FERC, 202/ 502-8902 or email: john.mudre@ferc.gov

November 15 WA

Managing Erosion & Water Quality on Construction Sites, NEBC Educational Forum, Woodinville, WA. Red Hook Public House, 1pm-5pm. RE: New CESCL Requirements; Construction Site Water Quality Parameters; BMP Selection and Implementation; Advanced Stormwater Treatment Technologies; More. For info: Sue Moir, NEBC, 503/ 227-6361 or email: sue@nebc.org

November 15-17 DC

Species Protection and the Law: ESA, Biodiversity Protection & Invasive Species Control, Washington D.C. For info: ALI-ABA, 800/ CLE-NEWS, or website: www.ali-aba.org

November 15-17 MA

Developments in Clean Water Law:A Seminar for Public Agency Managers and Attorneys, Boston, Sheraton Boston. Sponsored by the National Association of Clean Water Agencies. For info: NACWA, 202/ 833.2672, email: info@nacwa.org, or website: www.nacwa.org/meetings/#07winter

CALENDAR

November 16 CA
Groundwater Banking Guidelines for Central Valley Project Water, Bureau of Reclamation Workshop, Fresno, Piccadilly Inn, 2305 W. Shaw, Noon-3pm. RE: See Nov 14 Calendar Entry. For info: Joel Zander, Reclamation, 916/ 978-5270 or email jzander@mp.usbr.gov; or Lucille Billingsley, Reclamation, 916/ 978-5215 or email lbillingsley@mp.usbr.gov

November 16 CA
Klamath Hydroelectric Project: DEIS Meeting, Eureka, Red Lion Hotel, 1929 Fourth Street, 7-10 pm. RE: Comments & Recommendations on the DEIS. For info: John Mudre, FERC, 202/ 502-8902 or email: john.mudre@ferc.gov

November 16 WA
American Water Resources Association (AWRA) – Annual Washington State Section Meeting, Seattle, Museum of History and Industry (MOHAI). RE: Water Resources Disasters in Washington: Risks & Recovery. Keynote Speaker: Eric Holdeman, King County Office of Emergency Management. For info: Carl Einberger, Geomatrix Consultants, 206/ 342-1776 or email: ceinberger@geomatrix.com or website: www.wa-awra.org

November 16-17 WA
The Mighty Columbia Conference, Seattle. For info: The Seminar Group, 800/ 574-4852, email: registrar@theseminargroup.net, or website: www.TheSeminarGroup.net

November 16-17 OR
Oregon Wetlands, Portland. For info: The Seminar Group, 800/ 574-4852, email: registrar@theseminargroup.net, or website: www.TheSeminarGroup.net

November 16-17 ID
IWUA Water Law & Resource Issues Seminar, Boise, DoubleTree Riverside. Sponsored by Idaho Water Users Association. For info: IWUA, 208/ 344-6690, website: www.iwua.org

November 16-17 OR
Oregon Water Resources Commission Meeting, Portland. For info: Cindy Smith (OWRD), 503/ 986-0876, website: www.wrd.state.or.us/commission/index/shtml

November 16-17 CA
California Water Policy Conference 16, Los Angeles, Wilshire Grand Hotel. For info: www.cawaterpolicy.org

November 16-17 OR
Oregon Water Resources Commission Meeting, Portland. For info: Cindy Smith, WRD, 503/ 986-0876, website: www.wrd.state.or.us/commission/index/shtml

November 28-Dec 1 CA
National Water Resources Association Annual Conference, San Diego, Hotel del Coronado. For info: NWRA, 703/ 524-1544, email: nwra@nwra.org, website: www.nwra.org/meetings.cfm

November 28-30 NV
Collaborative Management & Research in the Great Basin: 2006 Workshop, Reno. For info: Dr. Jeanne Chambers email: jchambers@fs.fed.us, or website www.cabnr.unr.edu/GreatBasinWatershed/

November 29 OR
Renewable Energy Conference, Klamath Falls, Klamath County Fairgrounds, 8am-5pm. Sponsored by Klamath Soil and Water Conservation District. RE: Sustainable Energy Programs (Wind & Solar Power, Lowhead Hydroelectric). For info: Rick Woodley, KSWCD, 541/ 883-6932

November 29 - Dec 1 FL
Florida Stormwater Association 2006 Winter Conference, Orlando, Rosen Centre Hotel. For info: FSA website: www.florida-stormwater.org

November 30-Dec 1 NJ
Natural Resource Damages Litigation Conference, Newark. RE: Claims for Industrial Impacts to Biological & Physical Resources, CERCLA, CWA, Oil Pollution Act, Minimizing NRD Liabilities, Technical, Legal, Scientific & Economic Modeling, Effective Mediation. For info: Law Seminars Int'l, 800/ 854-8009, or website: www.lawseminars.com/

November 30-Dec 1 OR
Oregon Land Use Law, Portland. For info: The Seminar Group, 800/ 574-4852, email: registrar@theseminargroup.net, or website: www.TheSeminarGroup.net

December 5-7 MT
Montana Watershed Symposium, Great Falls. For info: Jennifer Boyer, 406/ 587-7331 or email: jboyer@sonoran.org

December 5-8 NV
2006 NGWA Ground Water Expo, Las Vegas, Sponsored by the National Ground Water Association. RE: Groundwater Sustainability, DOT Rulings for Drill Rigs, Latest Products & Technologies. For info: NGWA, 800/ 551-7379, email: customerservice@ngwa.org, or website: www.ngwa.org/expo2006/main.cfm

December 6-8 OR
OWRC 2006 Annual Conference: Challenges and Opportunities in Water Management, Hood River, Hood River Inn. RE: Water Quality Planning, Water Marketing & Banking, ESA Changing Nature, Local Governments Working, Protecting District Easements, Reclamation Managing, Congressional Actions, Pesticide Use Reporting, Litigation Update & More. For info: OWRC, 503/ 363-0121 or website: www.owrc.org

December 7 WA
"Evolutionary Changes and Salmon: Consequences of Anthropogenic Changes for the Long-Term Viability of Pacific Salmon & Steelhead," Seattle, NOAA Fisheries Northwest Fisheries Science Center. For info: Tara Torres, 303/ 497-8694 or email: tara@ucar.edu.

December 7-8 OR
Northwest Environmental Conference and Tradeshow - 18th Annual, Portland, Red Lion Hotel on the River (Jantzen Beach). For info: Northwest Environmental Conference, 503/244-4292 or website: www.nwec.org

December 7-8 NV
2006 Western Governor's Association Winter Meeting, Henderson. For info: WGA, 303/ 623-9378 or website: www.westgov.org/

December 9-13 LA
The 3rd National Conference on Coastal and Estuarine Habitat Restoration, New Orleans, Hilton Riverside Hotel. Sponsored by Restore America's Estuaries. For info: Steve Emmett-Mattox, RAE, 303/ 652-0381, email: sem@estuaries.org, or.website: www.estuaries.org/?id=4

December 11-15 CA
American Geophysical Union Fall Meeting 2006, San Francisco, Moscone Center West. RE: Session on Hydrologic Effects of Forest Management & Disturbance. For info: AGU, 800/ 966-2481 or website: www.agu.org/meetings/fm06/

December 14-15 OR
Oregon Environmental Quality Commission Meeting, Location TBA. For info: Helen Lottridge, ODEQ, 503/ 229-6725, or website: www.deq.state.or.us/about/eqc/EQCagendas.htm

(continued from previous page)

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January 2-4 ID

Seventeenth Annual Water Quality Workshop: Monitoring, Assessment & Management, Boise, Boise State University. For info: Don Zaroban, IDEQ, 208/ 373-0405, email: don.zaroban@deq.Idaho.gov, or website: www.deq.idaho.gov/water/assist_business/workshops/nps_workshop_07.cfm

January 12 OR

Oregon Fish & Wildlife Commission Meeting, Salem, ODFW Headquarters, 3406 Cherry Avenue NE. RE: Access & Habitat Emergency Seeding, Coastal Coho Conservation Plan, Fish Passage Priority Enforcement, Pacific Halibut Management, Groundfish Fishery Harvest Levels & Management, Damages for Commercial Fish Violations, R&E Project Approvals. For info: Casaria Tuttle, ODFW Director's Office, 503/ 947-6044, or website: www.dfw.state.or.us/agency/commission/minutes/

January 18-19 WA

Endangered Species Act Regional Conference (14th Annual), Seattle, Red Lion on 5th. RE: Case Law, Policy Developments, & Legislative Proposals & ESA Implementation. For info: The Seminar Group, 800/ 574-4852, email: info@TheSeminarGroup.net, or website: www.TheSeminarGroup.net

January 22-25 GA

Fourth International Conference on Remediation of Contaminated Sediments, Savannah, Marriott Riverfront Hotel. RE: Efficient Assessment, Effective Management & Successful Remediation. For info: The Conference Group, 800/ 783-6338, email: info@confgroupinc.com, or website: www.battelle.org/environment/er/conferences/sedimentscon/

January 25-26 CO

Colorado Water Congress 49th Annual Convention, Denver. For info: CWC, 303/ 837-0812, email: macravey@cowatercongress.org, or website: www.cowatercongress.org

January 26 OR

Symposium on Klamath River Basin, Eugene, University of Oregon. Sponsored by the Journal of Environmental Law & Litigation. For info: Melissa Peterson, mpeter10@uoregon.edu, JELL website: www.law.uoregon.edu//org/jell/klamath.php

January 30-Feb 2 FL

Winter Conference: National Association of Clean Water Agencies, St. Petersburg, Renaissance Vinoy Resort.. RE: Global Trends Impacting Public Utilities: The Rising Cost of Clean Water. For info: NACWA, 202/ 833.2672, email: info@nacwa.org, or website: www.nacwa.org/meetings/#07winter

February 1-2 NM

Law of the Rio Grande, Santa Fe, Eldorado Hotel & Spa. RE: Rio Grande Compact, Regional Planning & Conversion of Water, Active Water Resource Management & Adjudication, Municipalities' Demands, Indian Water Rights Settlements, Hydrology & Water Markets, Recreational & Environmental Uses & More. For info: CLE Int'l, 800/ 873-7130, email: registrar@cle.com, or website: www.cle.com

February 22-23 CA

25th Annual Water Law Conference, San Diego, Hotel Del Coronado. For info: ABA website: www.abanet.org/environ/committees/waterresources/home.html

The Water Report
Water Rights, Water Quality & Water Solutions in the West
260 N. Polk Street • Eugene, OR 97402