



# The Water Report

*Water Rights, Water Quality & Water Solutions in the West*

## In This Issue:

**Reauthorizing  
Hydroelectric  
Projects in Oregon ... 1**

**Coalbed Methane  
Extraction:  
Water Impacts ..... 5**

**Groundwater Rights  
in Blended Basins .... 14**

**Platte River  
Ecosystem  
Restoration ..... 18**

**Water Briefs ..... 24**

**Calendar .....27**

## Next Issue:

**California Water Reuse**

**Missouri River  
Management Issues**

**Pesticide Restrictions**

**Washington Water Law**

## ❧❧❧ HYDROELECTRIC PROJECT REAUTHORIZATION ❧❧❧

OREGON'S NEW FORUM FOR ENVIRONMENTAL NEGOTIATIONS

by Martha O. Pagel, Schwabe Williamson & Wyatt

Federal and state reauthorization of existing hydroelectric projects throughout the states provides a new and important forum for addressing environmental concerns and promoting stream flow restoration goals. In Oregon and throughout the West, existing hydro projects are coming due for federal relicensing. Fifty-year permits issued by the Federal Energy Regulatory Commission (FERC) during the 1950s and 60s are set for renewal, triggering an application and review process that draws careful scrutiny and active participation by states, Tribal governments, environmental groups and other affected interests. In Oregon, the state is deeply and uniquely involved. No other state has embraced the federal relicensing and state reauthorization quite like Oregon.

This article looks at new developments in both state and federal processes, providing a historical and policy perspective on the development of Oregon's state hydroelectric reauthorization program — affectionately known as the "HART" (Hydroelectric Application Review Team) process — and a summary of FERC's new "Integrated Licensing Process."

### BACKGROUND: AN OREGON STORY

Once upon a time in Oregon, there was no state license required for a hydroelectric power project. Before 1909, not even a water right was required, and the operator of a hydroelectric project had the same prerogative to make use of water as anyone else in the state — they simply staked a claim, on a first-come, first-served basis.

In 1909, the Legislative Assembly of the State of Oregon enacted the first comprehensive water use code, requiring the issuance of a state water right for all beneficial uses of water, including hydroelectric facilities. Under this system, the water rights issued for hydroelectric projects were the same as any other water rights — once perfected, they became vested, and could remain valid in perpetuity, so long as the use continued.

By 1931, things were changing in Oregon, and across the country. Following a trend toward regulation of the power industry, including at the federal level, the Oregon Legislative Assembly enacted a new code, requiring the issuance of a state license for all hydroelectric projects. Licenses could be issued for a period of up to 50 years and included various terms and conditions, including a water right that would expire at the end of the term of the license. Also in line with the federal model, the legislature further directed that, at the end of the 50-year period, if/when the private investment had been fully recovered by the licensees, the state would take over ownership of the licensed facilities. There was no provision for renewal.

As would be expected, in the late 1980s and early 1990s the realization struck that state and federal licenses issued since the 1930s would soon begin to expire. In Oregon, the power industry began to question the opportunities for renewal, or the threat of state takeover. This got people's attention. Industry watch-dog groups, environmental interests, state agencies and the legislature began to show concern.

## Hydro Projects

### Unique Model

In 1995, the Legislative Assembly took action again, and created a task force (a popular action in 1995 for public policy issues people were nervous about). In 1997, the task force made recommendations to the Legislative Assembly, and another new law was enacted, creating a program for the reauthorization of hydroelectric projects. Oregon's complicated and unique model, developed for the most part through a multi-year consensus process, is now in place and experiencing the growing pains usual for any new program. On balance, however, the underlying concepts of providing a state process that is coordinated with federal review, that seeks to achieve a "unified state position" and that provides a forum for active public involvement in project review, seems well worth the effort.

### HART

### No Process

In the lead-up to the 1995 legislative session, the state began what became nearly a decade-long process to develop and implement a comprehensive program for state involvement in the relicensing of hydroelectric projects. Two key issues were on the minds of state regulators, energy and environmental watch groups, and the industry. First, the state had no process in place for the renewal of existing state hydroelectric licenses issued under the 1931 power laws. Second, the state did have a statute, under those same 1931 power laws, that directed the state takeover of private facilities, upon full amortization of the initial investment. These issues arose against a legal backdrop of questions about the ultimate enforceability of the takeover law, and the authority of a state to exercise regulatory jurisdiction over federally licensed hydroelectric projects. A string of recent cases interpreting FERC jurisdiction suggested states would have only limited authority to affect the continued operation of projects licensed by the federal government. [See, *First Iowa Hydro-Electric Cooperative v. Federal Power Comm.*, 328 U.S. 152, 66 S. Ct. 906 (1946); *California v. FERC*, 495 U.S. 490, 110 S. Ct. 2024 (1990); *PUD No. 1 v. Washington Dept't of Ecology*, 511 U.S. 700, 114 S. Ct. 1900 (1994).]

### Limited Authority

### Debate

By the beginning of the 1995 legislative session, there was no agreement among the affected interests as to either the takeover provision or the appropriate direction for a state reauthorization program. Some argued for outright repeal of the state takeover provision, and others proposed immediate implementation. Some argued for a comprehensive state relicensing program, and others argued for outright federal preemption. As a starting point, the utilities proposed legislation simply repealing the takeover provision. The state and other stakeholders resisted – seeking a broader commitment to a state reauthorization process in exchange for the desired certainty regarding takeover. Near the end of the session, an agreement was reached among the private utilities, the state agencies, and the legislative leadership allowing for a conditioned repeal of the takeover law, in exchange for an industry commitment to participate in an interim process to develop a comprehensive, coordinated state reauthorization program for hydroelectric project reauthorization. Task Force I was born.

### Task Force Deliberates

For nearly two years, from the fall of 1995 until the start of the 1997 legislative session, the Hydroelectric Task Force, led by the Oregon Water Resources Department (OWRD), worked toward consensus on a legislative proposal creating a new state reauthorization program. The Task Force included representatives from: state agencies; investor-owned utilities; publicly-owned utilities; small privately-owned projects; municipalities; environmental groups; Tribes; and agricultural interests. The end product of their work was a Report to the Sixty-Ninth Legislative Assembly, in 1997, and a consensus bill, HB 2119, that passed Oregon's Senate and House with only one "no" vote. The measure gave birth to HART — the state's new Hydroelectric Application Review Team.

### State Reauthorization

In its summary of the measure, OWRD noted that some 166 state-authorized hydroelectric projects operated under licenses that would expire within the next 15 years. Before HB 2119, Oregon law did not provide provisions for re-authorizing these projects. Under the prior statutes, the licenses would expire, and the operators presumably would face the prospect of seeking new water rights and regulatory permits to continue power production at existing sites.

HB 2119, now codified as ORS Chapter 543A, filled that void by establishing a process and standards for the reauthorization of existing hydroelectric projects under a coordinated state agency process implemented by the HART. The bill required the state process to be procedurally coordinated with federal relicensing with FERC, and to minimize duplication of any application requirements, using a joint

**The Water Report** (ISSN pending) is published monthly by Envirotech Publications, Inc.  
260 North Polk Street, Eugene, OR 97402

**Editors:** David Light & David Moon **Phone:** 541/ 343-8504 **Cellular:** 541/ 517-5608

**Fax:** 541/ 683-8279 **email:** thewaterreport@hotmail.com

**Subscription Rates:** \$249 per year; Multiple subscription rates available.

**Postmaster:** Please send address corrections to The Water Report, 260 North Polk Street, Eugene, OR 97402  
Copyright© 2004 Envirotech Publications, Inc.

## Hydro Projects

### New Program

application whenever possible. An important provision for the industry was the new law's expression of state policy favoring reauthorization of existing projects, so long as they met standards specified in the bill, were consistent with other laws, and were found not to "impair or be detrimental to the public interest." ORS 543A.020(1). The program recognizes that existing projects have resulted in both benefits and costs to society, and that the opportunity exists upon reauthorization to promote the public benefits while minimizing the public costs. ORS 543A.020(2).

The new reauthorization program focused on issuance of the state water right by OWRD, and state certification of water quality compliance (i.e., the federal Clean Water Act "401 Certificate"—for which the Oregon Department of Environmental Quality (ODEQ) exercises delegated authority). This focus was, in large part, a response to a growing body of federal case law that suggested a state's interest in hydroelectric projects that were otherwise subject to FERC jurisdiction, may be limited to these state-controlled subject areas (see above). Relying on the long-standing acknowledgment of the state role in allocation of water, OWRD was given the lead in coordinating Oregon's new HART program. The unique role of ODEQ in carrying out delegated federal authority under the Clean Water Act (Section 401 Certification) is also recognized under the HART process, along with Oregon Department of Fish & Wildlife's significant responsibilities in commenting to both FERC and sister state agencies. These agencies participate in every HART process, reviewing every reauthorization application. In addition, as many as a dozen or more different state agencies would have the opportunity to participate on the HART, depending on the issues raised by a particular project under review.

### Unified State Position

A key element of the new program was its requirement of a "unified state position" to be developed through the HART process, and reflected in all agency actions. This notion was very important to the industry, who were concerned with the potential procedural boondoggle of dealing with multiple state agencies in both the state and federal review process.

Although Task Force I reached full consensus on key issues regarding the new reauthorization process, two major concerns were punted to Task Force II: 1) questions relating to fees to be paid by project operators to the state; and 2) questions relating to whether and how an existing project might be "decommissioned" in the event the operators did not seek reauthorization, or if reauthorization were denied. The group also addressed a growing list of administrative issues discovered in the early implementation of HB 2119.

### Instream Rights Conversion

Task Force II, meeting from the fall of 1997 until well into the legislative session of 1999, was finally able to reach agreement on fees, and administrative issues, but never came to resolution on key policy issues relating to project decommissioning. An important contribution of the Task Force II process, however, was a new provision allowing for the conversion of a hydroelectric water right into an instream water right in the event of voluntary project decommissioning. Under this provision, the water right could be transferred to instream use, with the original priority date of the underlying hydroelectric water right.

### Task Force III

The unresolved issue of the potential for involuntary decommissioning was left to Task Force III, which met during the interim between the 1999 to 2001 legislative sessions. By this time, the third generation task force process appears to have been losing its appeal and/or its enthusiasm for reaching consensus. After nearly two years of work, the group agreed only that if they were unable to reach agreement, there would be no bill. Despite early headway in identifying the process and standards that could be used for project decommissioning, the effort broke down under the weight of determining how a decommissioning effort would be funded, and whether the state could unilaterally require decommissioning by refusing to reauthorize an existing project. Agreement remained illusive; there was no bill. In the end, SB 319, adopted in 2001, authorized minor adjustments to the reauthorization process, and called it quits on further Task Force efforts.

### Workload

During the past few years, since enactment of HB 2119 in 1997, the state has begun to deal with the crushing workload of major project reauthorization, including applications on: the Umpqua River (PacifiCorp); the Klamath River (PacifiCorp); the Deschutes River (Warm Springs Tribes and Portland Gas & Electric (PGE)); the Bull Run and Sandy Rivers (PGE); the Clackamas River (PGE); the Snake River (Idaho Power Co.) and others.

#### AS HART EVOLVES, SEVERAL AREAS OF CONCERN HAVE EMERGED:

**ENERGY INTENSIVE:** First, if nothing else, participants have learned that Oregon's comprehensive HART process is, indeed, comprehensive and time-consuming. A small cadre of inter-agency staff comprise the basic HART group, with technical assistance from other field staff, as appropriate to the project. Given the demands of coordination and review under both the state and federal process, the agency staff are simply stretched too thin. Similar concerns are faced by environmental groups and other interested parties who seek to participate in the process.



## Hydro Projects

### USP Debate

### Governor's Involvement

### "ILP"

### Savings

### Public Participation

### High Stakes

USP CONCERNS: Second, there is growing worry among applicants that the promise of the "unified state position" (USP) may never be realized. Two schools of thought appear to have emerged regarding the nature of the USP in the HART process: 1) that it is intended to be merely a compilation of state agency viewpoints, shared through a single document; or 2) that it is intended to be a negotiated position, reflecting and attempting to reconcile the multiple, and potentially conflicting, agency missions and policies. Individual HART agencies understandably seek to protect and promote their individual agency responsibilities. They express concerns over the notion that the USP would require compromise among the agencies themselves — as opposed to one resulting from negotiations with the project applicants and interest groups. Applicants understandably seek to move beyond the traditional model of simply gathering and stapling together the diverse comments and recommendations of agency staff.

ADMINISTRATION: Third, it can be observed that the ultimate resolution of the first two concerns will require more direct, on-going involvement and guidance from agency policy levels and the Governor's office. In recent reauthorization processes, a new administrative approach has emerged of the HART technical team formed of agency program staff, supported by a policy level "executive team" from each agency, led by a representative from the Governor's staff. This model, particularly when used in a collaborative, alternative model for state and FERC review, appears to offer a more promising option for ensuring that the state's unified position reflects multiple public needs and can be supported by agency management.

### FERC CHANGES

At the same time that Oregon's reauthorization has been growing and maturing, the FERC process has also been evolving. Under newly adopted rules, FERC offers an "Integrated Licensing Process" (ILP) intended to meld the best of FERC's prior "traditional" and "alternative" process options. FERC has described the new process as "a major step to streamline the licensing of hydropower projects by adopting a new, more efficient process that is better coordinated with the processes of other federal and state agencies and Native Americans."

FERC estimates that the ILP will save applicants about 30 percent of the cost of preparing a license application under the old approach. The program merges pre-filing consultation with the development of environmental analysis under the National Environmental Policy Act (NEPA). Under past FERC procedures, these steps occurred sequentially — adding to the total time involved, and creating the potential for disconnect in planning and application development.

According to FERC, the new process also allows greater coordination among FERC and other federal and state agencies with mandatory conditioning authority, and increases assistance available by FERC staff to both applicants and stakeholders during the application development stage.

The ILP is also intended to provide increased public participation in the pre-filing consultation and better coordination with state water quality certification processes. The ILP will include establishing a process plan, schedules and deadlines for all participants (including FERC). Finally, the process provides for development of a FERC-approved study plan by the applicant, with both informal and formal dispute resolution, if needed to resolve study disagreements.

[The ILP was adopted as a final federal rule on July 23, 2003 (18 CFR Parts 2, 4, 5, 9, 16, 375 and 385). FERC's website gives a link to the rules: [www.ferc.gov/industries/hydropower/indus-act/hl-over.asp](http://www.ferc.gov/industries/hydropower/indus-act/hl-over.asp).]

### CONCLUSION

The intense focus on state and federal relicensing processes arises because the stakes are high and players know it. With FERC licenses being offered for additional 50-year renewal periods, environmental groups, Tribes, states and others view the relicensing process as their one opportunity to influence river management and mitigation measures for decades to come. For applicants, a commitment to effective, collaborative process can mean the difference between years in licensing limbo and negotiated certainty. Available dollars can then be spent on desired mitigation, rather than litigation.

Oregon's HART process, and the new FERC Integrated Licensing Process offer the option for more coordinated, timely and effective approach to decision-making at the state and local level.

### FOR ADDITIONAL INFORMATION:

MARTHA PAGEL, Schwabe Williamson & Wyatt, 503/ 399-7712 or email: [mpagel@schwabe.com](mailto:mpagel@schwabe.com)

**Martha Pagel** is a lawyer with Schwabe Williamson & Wyatt, in Portland and Salem, Oregon. She was formerly Director of the Oregon Water Resources Department, and chaired Task Force I, in developing the framework for Oregon's HART Process.

## Coalbed Methane

### Gas “Plays”

### Impacts

### “Dewatering”

### Unique Impacts

## WATER & COALBED METHANE EXTRACTION

NEWFOUND IMPACTS AND WATER QUALITY MITIGATION EFFORTS  
by Tom Darin, Director, Jackson Hole Conservation Alliance

When the extraction of coalbed methane (CBM) took off in the Rocky Mountain region in the late 90's — particularly with the major existing “play” in the San Juan Basin (New Mexico and Colorado) and the promising new play in Powder River Basin (straddling Wyoming and Montana) — financial analysts called it the hottest natural gas play in North America.

No one knew then just how accurate this prediction would come to be. CBM impacts are so unknown — and in some cases so severe — that the mere mention of new CBM drilling prospects draws the ire of counties and towns. Unlikely alliances are being forged between landowners, ranchers and environmentalists. CBM is being touted by the current federal administration — which has clearly prioritized western public lands for energy production — as a key centerpiece of its national energy policy.

In some places, CBM impacts are measured not merely in stretches of new roads, buckets of wastewater or a few new wells being drilled here or there. Rather, the impacts are of a whole new order: tens of thousands of new wells; thousands of miles of new roads and pipelines; and not millions, or even billions, but several *trillion* gallons of water brought from underground and dumped onto the fragile soils in the western sage-steppe habitat. It is these water impacts, in terms of both quality and quantity problems, that are the focus of this article.

### WHAT IS CBM?

Coalbed methane, put simply, is methane (CH<sub>4</sub>) or natural gas — the “blue” flame we cook with and that we see in our furnaces. The “coal” is in reference to the methane's existence in underground coal seams. These seams double as aquifers and in general, the natural gas is held in place by water pressure.

Formed over millions of years, CBM is a byproduct of decomposing organic material. Methane is adsorbed to coal particulates in underground coal seams that also serve as aquifers. Methane is held to these particulates by water pressure. Coal seams have to be “dewatered” to depressurize the coal seam, allow the methane to vent freely through the well bore, and be captured and transported to market. [Much background material for this article is derived from two sources that have previously collected this information, documenting the history and impacts of CBM extraction. See generally Thomas F. Darin & Amy W. Beatie, “Debunking the Natural Gas ‘Clean Energy’ Myth: Coalbed Methane in Wyoming's Powder River Basin” — 31 Env'tl. L. Rep. 10,566, 10,573 n.58 (2001); Thomas F. Darin, “Waste or Wasted?—Rethinking the Regulation of Coalbed Methane Byproduct Water in the Rocky Mountains: A Comparative Analysis of Approaches to Coalbed Methane Produced Water Quantity Legal Issues in Utah, New Mexico, Colorado, Montana and Wyoming” — 17 J. Env'tl. L. & Litig. 281 (2002).] The United States Geological Survey (USGS) summarizes the dewatering process as follows:

The coalification process, whereby plant material is progressively converted to coal, generates large quantities of methane-rich gas, which are stored within the coal. The presence of this gas has been long recognized due to explosions and outbursts associated with underground coal mining. Only recently has coal been recognized as a reservoir rock as well as a source rock, thus representing an enormous undeveloped “unconventional” energy resource. But production of coalbed methane is accompanied by significant environmental challenges, including prevention of unintended loss of methane to the atmosphere during underground mining, and disposal of large quantities of water, sometimes saline, that are unavoidably produced with the gas.

[USGS Fact Sheet FS-019-97, “Coalbed Methane – An Untapped Energy Resource and an Environmental Concern” (1997)]

This dewatering process is at the heart of most of the environmental concerns at the center of the ongoing CBM debate. In Wyoming for example, each well currently averages 17,000 to 22,000 gallons of produced byproduct water per day during the initial years of production. Average conventional oil and gas wells produce between 200 and 400 gallons of water per day. Each CBM well should be properly viewed as two wells—i.e., a natural gas well and a water well. In fact, this unique feature of CBM production caused the federal Bureau of Land Management (BLM) in Colorado to describe the unconventional CBM resource extraction as “radically different” from the traditional conventional deep natural gas extraction process (US Department of the Interior, Colorado BLM, Notice to Lessees (NTL) 88-2, 1 (Dec. 3, 1998)). The Wyoming BLM admitted in the early 1990s that its existing land use plans did not cover the unique impacts of CBM production. This different extraction process naturally lends CBM wells to being regulated differently under western groundwater law as to appropriating, beneficially using, and handling these massive volumes of water.

## CBM IN THE WEST

Our nation now consumes approximately 22 trillion cubic feet (TCF) of natural gas each year (National Petroleum Council information). By 2020, the US Department of Energy predicts we will consume 34 TCF annually, close to a 60% increase. CBM now comprises 6% to 7.5% of US natural gas production and is expected to rise to 7 TCF by 2010 — over 20% of the predicted US consumption.

The San Juan Basin (northwest New Mexico / southwest Colorado) is the nation's leading producer of CBM. That is expected to change in the near future. In 2003, BLM finalized a decision for 51,000 CBM wells tapping into 39 TCF of reserves in the Powder River Basin (PRB), spanning from northeast Wyoming into southeast Montana. The numbers are astronomical — at peak production, for example, the Wyoming PRB play is expected to top 3.6 billion cubic feet of gas per day, and produce over 25 TCF for the life of the project. Equally off-the-charts are the environmental impacts to do so — Montana projects as many as 26,000 wells in the PRB, while estimates in Wyoming range from 51,000 to 80,000 to a “high scenario” of 139,000 wells. In short, nothing of this magnitude has ever been proposed, let alone studied, in the history of the Department of Interior when it comes to federal onshore oil and gas wells. In fact, the current total of all such wells is 59,000 — *nationwide* (personal communication with Jay Douglas, US Department of Interior, Office of Minerals, Realty & Resource Protection (Sept. 7, 2001). CBM wells in just one basin in the West will more than double that. Indeed, the Department of Interior now calls the Powder River Basin in both Wyoming and Montana the “centerpiece” of the controversial Bush National Energy Policy. [See Memorandum in Support of Petition for Reconsideration, filed by the US Dept. of Interior Solicitor's Office (Aug. 8, 2002) at 2, in “Wyoming Outdoor Council” — IBLA 2000-241R.]

CBM can be found virtually everywhere there is coal, and coal formations are prevalent in the Interior Rockies. Other major CBM plays in the region include the Uinta Basin in Utah and Colorado (10 TCF of CBM reserves), the Piceance Basin in Colorado (99 TCF), the Raton Basin in Colorado and northeastern New Mexico (10 TCF), the San Juan Basin in New Mexico and Colorado (84 TCF) and the big unknown — the 314 TCF of in place CBM reserves in the Greater Green River Basin in southwest Wyoming and northern Colorado [see David G. Hill et al, of the Gas Research Institute, “Changing Perceptions Regarding the Size and Production Potential of Coalbed Methane Resources” (March 27, 2000), available at the Strategic Research Institute, 333 7th Ave., New York, NY 10001-5004. The SRI website is: <http://srinstitute.com>]. One may not be surprised to learn that industry literally *circled* each one of these areas on a map of the western United States as key areas of interest for oil gas exploration, in working with BLM [see US Dept. of Interior, BLM, 2002 Budget Justifications 1-18 (2001)].

Also not surprising, each of one these areas is a key component of the Bush administration's National Energy Policy — subject to fast-tracked, expedited, leasing and drilling permit approvals. Recently, BLM announced to one western state BLM office that “when an oil and as lease parcel or when an APD [drilling permit request] comes in the door, *that this work is their No. 1 priority.*” [See US Dept. of Interior, Information Bulletin UT 2002-008 (Jan. 2002).] Under the Bush Energy Policy, CBM is now touted as the greatest promise short-term supply for natural gas (James Coffin, “Interior Puts its Natural Gas Eggs in CBM Basket — For Now” 27 Public Lands News 5 (July 19, 2002).]

## IMPACTS OF COALBED METHANE PRODUCTION

CBM is just like any other oil and gas field, but with the addition of the unique water and air impacts. Impacts common to both types of production include: roads; power and pipelines; reserve pits for drilling fluids; compressor and gas-treatment; central management facilities; staging areas for trucks; PVC pipe; and other equipment. All these lead to serious surface disturbance, erosion, water and air pollution and noise. In short, our rugged, sage brush western landscapes are transformed into massive industrial zones. [See generally *Western Organization of Resource Councils v. Kathleen Clarke*, No. CV 03-70-BLG RWA (D. Mont., complaint filed May 2003).] CBM production also uniquely affects water — both underground water and surface water.

**Water: Underground Impacts**

The dewatering process can cause significant impacts to underground aquifers. In the Powder River Basin, CBM wells range from 350 feet to 2,000 feet in depth. Most wells are drilled to depths of 1,000 feet or less. These gas wells are drilled to the same aquifers used for domestic and agricultural purposes. As the coal seams are dewatered, so are the aquifers. In the Powder River Basin, CBM wells have caused water wells of landowners and ranchers to lose hydraulic pressure and in some cases to go dry.

BLM predicts that many underground aquifers will take decades to partially “recharge” (be replenished) through infiltration. Full recharge may take more than 100 years. This is a major concern as Montana and Wyoming enter their fourth consecutive year of serious drought. Accordingly, the proposed dewatering jeopardizes water supplies on a large scale in the short and long term.

**Coalbed Methane****Powder River Basin****Many Wells****Many Plays****National Policy****Impacts****Water Depletion**

**Coalbed  
Methane  
Migration**

The dewatering process can also cause methane migration. Methane gas can be lethal. Once coal seams are dewatered, methane is free to migrate to the surface. The BLM admits that, due to the shallow depth of CBM wells, migration is a serious concern for landowners. BLM advises residents of the Powder River Basin to monitor their basements for possible methane accumulation and explosion. In addition, methane migration can pose a risk to soils, vegetation, and burrowing mammals.

**Subsidence**

Dewatering can also result in subsidence, or the partial collapse or compaction of underground areas such as aquifers. Underground water aquifers are sometimes an important structural component of the geology. This is particularly true where the coal seams and aquifers are shallow.

**Water: Aboveground Impacts**

CBM production also has unique and significant aboveground impacts involving both water quality and quantity. CBM-produced water in the Powder River Basin is typically high in salinity (total dissolved solids (TSD) including all salts) and sodicity (the ratio of sodium to magnesium and calcium). Water that is high in salinity and sodicity can negatively affect soils and plant life and therefore is often not suitable for irrigation.

**Disposal**

BLM projects that CBM development in the Basin will pump trillions of gallons of subsurface water to the surface. Each well is expected to produce 13,000 to 17,000 gallons per day. BLM proposes to dispose of this water in one of two ways: 1) infiltration pits (or reservoirs) and 2) direct discharge onto ground or into ephemeral drainages. Approximately 4,000 unlined pits in Wyoming will be excavated to hold this water. Water in these pits that does not evaporate will gradually soak back into the water table and/or underground aquifers. The chemistry of this water as it sits in the infiltration pits could change, as pollutants in the pits are concentrated through evaporation of the water. An additional issue is that reclaiming these 4,000 pits at the end of the project may pose problems, since they will contain concentrated salt deposits that will have been accumulating for over 15 years.

**Surface  
Discharge**

The other primary method of handling the CBM water will be through direct discharge onto the ground surface. This water will not be treated for salinity or sodicity before being discharged. Surface disposal of large quantities of water will likely cause soil erosion and kill native vegetation. Much of this water will enter the ephemeral and intermittent drainages of the Basin, which in turn flow to perennial rivers and their tributaries. Constant discharge of large quantities of water would alter the ecology of this western watershed by providing regular flows in drainages that are, by nature, ephemeral or intermittent.

The combination of methods proposed for handling the CBM water will lead to a significant amount of this water entering these perennial rivers. When discharged in huge quantities to area streams, this produced water is expected to affect the quality of water in those streams. Water from the perennial rivers in the Basin may not be suitable for irrigation. In addition, the chemistry of CBM water poses threats to aquatic life, including fisheries.

**WATER QUANTITY AND QUALITY ISSUES****Water Quantity: Is Water Being “Wasted”****“Waste”  
of Water**

We’re just seeing the tip of the iceberg in Wyoming PRB water quantity. Pouring a billion gallons or more of water per day onto the ground surface or unlined infiltration pits (potential peak rate with 50,000 wells producing) has its problems, to be sure. Those are generally described above: massive erosion, direct plant kills, transforming ephemeral wetlands into year round CBM water streams and altering the stream flow regimes. From the viewpoint of western water law is the important notion that perhaps we are “wasting” this valuable water resource. Under western water law, a water user is generally not allowed to “waste” water — and thereby fail to put the water to beneficial use — by employing grossly inefficient methods for diversion and use.

Wyoming’s approach to CBM byproduct water is unique from other Rocky Mountain states. It is the only state that requires a beneficial use permit from the state engineer at the point of diversion. This model is problematic because only a fraction of the water can be beneficially used — the rest is “wasted” in violation of Wyoming law. Western water law has never included in the definition of “beneficial use” the use of byproduct water to allow gas or oil to flow to the surface. Rather, the beneficial use must always be the use that the water *itself* is put to.

**“Beneficial Use”**

Of course, Wyoming could follow the byproduct water code section that, similar to Utah, New Mexico and Colorado, does not require any permit for the diversion of water when such diversion is associated with oil and gas development. In Wyoming, as in the other states, this statutory provision considers such water “waste” and only after initial diversion is a State Engineer permit required to put the water to beneficial use. Perhaps a better approach for Wyoming would be to assume that all of the byproduct water is waste (which transfers jurisdiction of handling the water to the Wyoming Oil and Gas Conservation Commission), and then, where appropriate for irrigation, drinking, or stock watering, put a



**Coalbed  
Methane****Byproduct  
or  
Future Use?****Groundwater  
Pollution****NPDES Permits****Salinity Impacts****Leaching****Sodicity**

small fraction of the water through the beneficial use permitting process. However, this model is also problematic because although much of the byproduct water is not suitable for long term irrigation, it is much different than the type of oil and gas byproduct water contemplated when the Wyoming byproduct statute was passed. As discussed below, the water (if untreated) may cause problems for soils, vegetation and aquatic life. On the other hand, in terms of dissolved solids (total salts) and most other trace contaminants, this water in many formations is on the fringe of being suitable for many uses, including irrigation and even possibly drinking (particularly if treated). While considered “waste” as a byproduct of oil and gas production, we may in fact be “wasting” this water in violation of western water law by dumping it carelessly onto arid soils to evaporate and having some portion of it end up in the Gulf of Mexico.

Thus, CBM byproduct water should not be considered and treated as waste when it could be stored for future potable drinking water or for future desalinization treatment allowing other uses.

**Water Quality**

As stated, most of the byproduct CBM water in Wyoming is dumped untreated onto the arid soils in the Powder River Basin, or dumped into thousands of excavated reservoirs or pits, pock-marking the landscape. These reservoirs, however, are intentionally designed to bleed into the water table – they are unlined and even have bore holes in the bottom to “enhance” infiltration. Two important aspects of this handling method have never been studied by any state or federal agency: (1) the amount that evaporation and exposure to soils in these reservoirs changes CBM water chemistry as it infiltrates into the ground; or (2) the degree to which this seeping water is hydrologically connected to surface waters.

**SALINITY AND SODICITY**

The main legal mechanism for controlling the water pollution from CBM wells is the discharge permit program required by Section 402 of the federal Clean Water Act (CWA), 33 U.S.C. § 1342. The CWA prohibits the discharge of any pollutant from a point source into navigable waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit (33 U.S.C. §§ 1311(a), 1342). A discharger must either obtain an individual permit or in some cases coverage under a general permit (see 40 C.F.R. § 122.28).

CBM produced water is a pollutant under the Clean Water Act. The Wyoming Department of Environmental Quality always treated it as such, thereby requiring section 402 NPDES permits for each well. This fact was contested in Montana, but the 9<sup>th</sup> Circuit has now established that CBM water is in fact a pollutant. [See *Northern Plains Resource Council v. Fidelity Exploration and Develop. Co.*, 325 F.3d 1155 (9th Cir. 2003).] This is as it should be: CBM byproduct water contains, in addition to salts, heavy metals such as: barium; aluminum; lead; chromium; copper; arsenic; manganese; iron; selenium; sulfate; and zinc.

To date, however, the major emphasis has been on the salt content of this water, as irrigation is the major use of PRB watersheds. Overall salt content is an issue (expressed in total dissolved solids or electrical conductivity) as well as sodicity, the amount of sodium in comparison to magnesium and calcium. The general issue is to what extent will irrigation practices be impacted, when this salty water is mixed into perennial rivers such as the Powder, Little Powder, Belle Fourche, Cheyenne or Tongue.

Salinity (often referred to as the “salinity hazard”) is the potential for accumulation of soluble salts in the root zone. Although some plants tolerate more salts than others, all plants have a maximum tolerance. The guiding literature provides that salinity, as measured by electrical conductivity (EC) in dS/m, is satisfactory for irrigation at <0.75 dS/m, can provide suitable crop growth with proper management at 0.75 to 2.25 dS/m, and is generally unacceptable for crop irrigation with >2.25 dS/m values. [US Department of Agriculture, “Agricultural Handbook 60: Diagnosis and Improvement of Saline and Alkali Soils” at 71 (L.A. Richards ed., 1954).] Importantly, this assumes the water is applied to non-saline, non-sodic soils. High salinity makes water less available to plants and at very high levels the plants may suffer direct salt damage. Waters are not suitable for irrigation with an EC greater than 2.25; in areas with restricted drainage (typical of the PRB), anything higher than 1.2 is problematic. EC values in the PRB are variable but are often higher than both these parameters.

Salinity build-up or concentration is more problematic on upland soils, as they are typically underlain by bedrock as opposed to sand and gravel on alluvial valley floors. Thus, the “leaching requirement,” the percentage of irrigation water that must be added to leach the salt build-up from the root zone, is higher. As water quality deteriorates, the leaching percentage must be increased to maintain existing agricultural production. Importantly, salinity build-up, even in the 0.7 to 2.25 range, is acceptable only if proper management is applied.

In addition, CBM water can have a high sodicity, commonly expressed as the sodium absorption ratio (SAR). Use of surface waters with high SARs for irrigation can reduce the productivity and yield of the irrigated cropland. The water causes a disproportionate concentration of sodium adsorbed by the



## Coalbed Methane

irrigated soil at the expense of calcium and magnesium, causing soil structure to break down and the soil particles to disperse. This reduces the permeability of soils and consequently decreases the storage of plant-available water in the soil. It can increase both runoff and erosion.

High sodicity reduces water movement into the soil, decreases the storage of plant-available water in the soil, and increases overland flow and erosion on sloping landscapes. As the proportion of sodium adsorbed on a soil increases, the soil tends to disperse, which results in reduced rates of water penetration. When water cannot penetrate or effectively infiltrate into the soil horizons, there is less water available for plant/root uptake. This lower availability of water directly and negatively affects plant productivity. The SAR values for water at 6 to 8 are the upper threshold before infiltration and permeability problems will affect existing agricultural uses. The fine textured and clay soils common to the Powder River Basin are particularly sensitive to the addition of sodium, as they tend to disperse rapidly.

### Emerging Developments

#### INCREASING WATER BYPRODUCTION

Things are changing on the water front. For the existing 10,000 plus producing wells in the PRB, almost all of them are within the eastern portion, near Gillette ("Wyodak play"). There, water quality is generally much better than the rest of the 8 million acre basin, and as you move north and west, water quality decreases and in places, water quantity is significantly higher per well.

The Big George play is the latest and hottest CBM play in the Basin. Compared to the average production rate of 10 gallons per minute (gpm) in the eastern part of the basin, initial water production from the Big George can be between 75 and 150 gallons per minute, or over 10 times the water per well. The existing wells in the PRB have captured about 4 percent of the 25 TCF in recoverable reserves, taking 80 billion gallons of water out of the ground to do so. That aligns with the recent Environmental Impact Statement (EIS) estimate from BLM of 1.4 trillion gallons expected to be depleted from near-surface coal aquifers during the life of the 51,000 well CBM play. Thus the future impact of the Big George play calculates-out to be 2 trillion gallons with 96% of the reserves remaining.

As anywhere from 50-to-70% of the remaining 25 TCF of gas in the basin are expected to come from this formation, BLM is dramatically revising its produced water estimates. The agency now predicts that CBM wells will produce *7.5 trillion gallons* of water over the life of the play in the basin. That is five times more than studied in the recent environmental impact statement. This is big news and it means that the previous major impacts just went up significantly — including: the number and type of reservoirs; discharge points; water quality; flooding of ephemeral streams; and tons — millions of tons — of additional salts added to soils and surface waters. Also problematic is that the SAR and EC values of the produced water are higher. This new information should likely cause BLM to supplement its EIS — this is significant data and will likely throw-off the calculations from all previously studied impacts. It is unfortunate indeed that BLM had access to Big George information during its study and chose rather to base impacts for 51,000 wells according to a few hundred producing wells in the Wyodak play.

#### WATER WELL IMPACTS

With water production increasing — and to new levels with the Big George play — impacts to water wells are becoming an issue of increased concern. With 27,000 permitted water wells in the Powder River Basin, depleting nearby aquifers of a hundred (or more) million gallons of water-per-day might give agencies pause over impacts to pre-existing water rights. And for good reason. The "mitigation" idea in BLM's environmental study is for water well agreements relating to wells within .5 miles of any CBM well. This is problematic given that BLM noted in the same study that each CBM well could have drawdown impacts from 10-to-14 miles away in the same aquifer, leaving many wells unprotected. Of the 27,000 permitted wells only 254 are for irrigation with the rest for domestic and other uses — in itself testimony about the suitability of this water for all uses.

Dr. John Bredehoeft worked for 32 years at USGS and retired as the Senior Research Geologist in the Service's Water Resources Division. He reviewed BLM's final environmental review for the 51,000 wells in 2003 and found that many of the existing wells would be impacted by the CBM dewatering process. He commented that the proposed water well agreements left most well owners unprotected and that replacements for just 5,000 affected wells could cost over \$50 million — a stunning impact thus far ignored by BLM. Dr. Bredehoeft further noted that replacement wells would often be lower in water quality than existing ones and the costs associated with treating this water for intended uses was left unstudied by BLM.

Apparently, wells have started to go dry in the Basin in increasing numbers. Through 2002, about 50 wells were replaced either voluntarily by industry or by the operation of surface use agreements. In 2004, reports indicate that water wells in the northwestern part of the Basin are being impacted as well. Numerous wells have gone dry near Sheridan, and homeowners cannot afford the ongoing expense of

## Water Production Increase

## Estimates Rise

## Well Interference

## Dry Wells

## Coalbed Methane

### Infiltration Pits

### "On-Channel" Permit

### Water Right Impacts

### Atomizer Consequences

### "Handling" Shifts

operating new water systems. With higher levels of dewatering than earlier anticipated, and thousands of water wells in the same or nearby aquifers, one can only expect this problem to worsen. [See Mike Stark, "Dry Wells Blamed on CBM" — Billings Gazette, Jan. 30, 2004; Dustin Bleizeffer, "Wells Going Dry in Sheridan County" and "Homeowners, Company Discuss Mitigation" — Casper Star Trib., May 4, 2004.]

#### RESERVOIRS AND MORE RESERVOIRS

For the PRB play, up to 4,000 reservoirs or retention pits will be excavated into the landscape for "containment" purposes. Between the draft and final environmental impact statements for the 51,000 wells, BLM changed its preferred method of water handling to these infiltration pits, due to water quality violations predicted by the US Environmental Protection Agency (EPA) with the former emphasis on direct discharge to ephemeral and perennial streams. While BLM predicted up to 4,000 reservoirs, they based this number on the average water production for CBM wells (water production declines rapidly after the first two year of dewatering). According to Dr. Larry Munn, soils scientist at the University of Wyoming, BLM should have based the number of reservoirs on the maximum water production when all the new wells come on line — thus, in fact, the Basin may see up to two or three times the number of pits, or 12,000. Indeed, the reservoir impacts may have been grossly miscalculated.

These reservoirs pose many problems, from concentrating effluents and bleeding higher-salinity water into the alluvial aquifer, to the end-game questions of how to reclaim thousands of these 6-acre sites after receiving salty water for 15 years — these salt-crustured soils will be unlikely to support any vegetation. Wyoming has been scrambling to deal with permitting these reservoirs in the past three years — given their new emphasis — and the resulting process is somewhat complicated. No less than three state agencies — the Oil and Gas Conservation Commission, Department of Environmental Quality and State Engineer's Office — all have a role in permitting.

The big delineation with reservoir placement is whether they are "on-channel" — meaning within an ephemeral draw, or "off-channel" — usually away from waterways of the US and upland. In 1998, the Army Corps of Engineers approved a general permit for these on-channel reservoirs, and because of environmental concerns this general permit is under attack by conservation groups in federal court. [See *Wyoming Outdoor Council v. Army Corps of Eng'rs*, No. 1:02 CV 0077 HKK (D.D.C., venue transferred to Wyo. Dist. Ct.) (filed Jan. 2002).] The Corps is presently updating this general permit.

Major issues with these on-channel reservoirs include blocking down-stream water rights and blocking the free-flow of these ephemeral draws that dominate the Basin in terms of wetlands. Though these gullies typically receive little precipitation each year, it is very high quality in the form of snow melt-off or early summer rains. This feature leads to these wetlands being rich in native grass production and biodiversity. On-channel reservoirs contain CBM water year round, and block the natural water flow, in addition to allowing CBM over-flow from the dams into lower reaches of the draws. Recently, one company sought application for up to 113 reservoirs, many of which will be on-channel. The application is drawing fire from the Wyoming Game and Fish Department, as this many reservoirs in one waterway will lead to detrimental stream fragmentation and negative impacts on both fish and wildlife.

Another major developing concern is that these reservoirs are attracting mosquitoes. And in turn, the threat of exposure to the West Nile Virus has increased. Campbell County (the current heart of CBM drilling in the Basin) had an unusually high number of people infected with the virus in 2003. In addition, the imperiled sage grouse, already being considered for federal Endangered Species Act listing due to other threats, appears to be impacted by the virus. Eight sage grouse died recently in a matter of days due to the illness. As of yet, however, there has been no direct link to these CBM water holding ponds and the human and grouse exposures. A detailed study on these issues is slated for completion by 2006.

#### AERIAL SPRAYING

Another new development is the use of aerial sprayers, or atomizers, to handle CBM produced water. BLM, in its recent EIS for the 51,000 wells in the PRB, predicted that anywhere from 5% to 10% of the expected 1.4 trillion gallons of produced water over the lifetime of the project would be handled by these atomizers, or land application devices. New issues are arising from this water handling method, proving that every time industry comes up with another way to deal with this water, the law of unintended consequences is right around the corner. First, in wintertime, the CBM water tends to freeze around the discharge point, forming cones of salt-concentrated ice. Second, the aerial spraying of the water doesn't rid the soils or vegetation in the Basin of the salt — rather, the salt is just scattered by the wind to broad areas of soil. In the end, the same amount of salt is deposited into the soil and water system — and future storm events will eventually mobilize these deposited salts.

Thus, we have seen water "handling" progress from untreated direct discharge to land and streams in the early CBM days, to an emphasis on ephemeral draws in the late 1990s, to a redirected emphasis on impoundments or reservoirs starting around 2002. Now, added to the equation are the atomizers. How-

## Coalbed Methane

### Point Source?

ever, as little or none of this water is being treated for its salt content, none of these handling methods really change the overall salinity balance: meaning that in one way or another, there will still be 3.5 million tons of salt deposited into the Basin over the life of the project. These water-handling methods only serve to alter the means, places and time frame in which these salts will accumulate. Operators may be violating the CWA (for failing to obtain a 402 permit) if it can be shown the sprayed effluent will enter a waterway of the US, as this type of spraying is arguably a point source. [See *League of Wilderness Defenders v. Forsgren*, 309 F.3d 1181 (9th 2002) (holding that an airplane aerial spraying of insecticides through mechanical apparatus was a “discrete conveyance” constituting a point source of pollution).”]

### IMPACTS ON AQUATIC LIFE

The early water quality focus since about 2000 in Wyoming has been solely limited to salinity, sodicity and irrigation. That is starting to change, however, as recent reports suggest that CBM byproduct water effluents may be harmful to aquatic life and fisheries.

As early as December 2001, the Montana Departments of Environmental Quality (MDEQ) and Fish, Wildlife and Parks (MFWP) started to analyze adverse impacts of water quality on aquatic resources. Sodium bicarbonate in some CBM areas is the most prevalent salt, and the bicarbonate ion “is quite lethal to fish.” The agencies further discussed an appropriate threshold for bicarbonate to estimate the potential impact of CBM discharges on aquatic species [Abe Horpestad, Don Skaar and Helen Dawson, untitled paper, (Dec. 18, 2001)]. MFWP weighed in again on this issue in October, 2002, when Montana’s Board of Environmental Review proposed water quality standards. Arguing that nonsignificance criteria be adopted for EC by defining it as “toxic” the agency stated: “[I]t is safe to say that at some level, elevated levels of conductivity . . . are toxic to every aquatic species and every life stage . . . [T]he evidence is plain that EC is toxic to aquatic life.” [Letter from Jeff Hagener, MFWP, to Board of Environmental Review (Oct. 3, 2002).]

### Montana WQ Standards

### Study Findings

In May 2002, scientists at the University of Wyoming released a related study with several important findings: 1) the variability of flow in many PRB rivers is critical for favoring native species and these flow regimes could be altered by the addition of massive quantities of CBM water; 2) the dilution of salinity due to CBM water is just as important to native species as the more commonly thought of problem – increasing salinity; 3) as water quality can be highly variable among CBM wells, even those at the same depth in the same geological formation, water samples from 20 miles apart can produce spurious results; 4) CBM byproduct water in certain parts of the Basin tended to increase sodium and bicarbonate concentrations in “much” of the Powder River; 5) CBM byproduct water might have significant impacts on recreational fisheries in the Tongue river drainage due to major increases in salinity and changes in ion ratios; and 6) CBM byproduct water at certain times, in some locations, might be acutely lethal to aquatic toxicity species (e.g., *Daphnia magna*, *Ceriodaphnia dubia* and *Pimephales promelas*). [See Susan J. Clearwater, Brady A Morris and Joseph Meyer, “A Comparison of Coalbed Methane Water Quality Versus Surface Water Quality in the Powder River Basin of Wyoming, and An Assessment of the Use of Standard Aquatic Toxicity Testing Organisms for Evaluating the Potential Effects of Coalbed Methane Product Water” (May 2002) (University of Wyoming, Dept. of Zoology and Physiology).]

### Species Diversity Decline

Research progressed in 2003, where scientists focused on the Tongue river watershed, which generally is the cold water fishery in the PRB. Scientists found that due to low natural loading of dissolved solids in the Tongue river drainage, CBM water should be reinjected or kept in lined pits, otherwise it might significantly impair those streams. In one tributary, Squirrel Creek, water quality upstream and downstream of unlined reservoirs for “holding” CBM water exhibited marked differences. One general observation about the impacts to macroinvertebrates was a “marked decline” in species diversity, including the near absence of once abundant caddis fly larvae.

The differences between aquatic species in the CBM-influenced water and the upstream water (free of CBM discharge) showed a key correlation in species composition and change:

Squirrel Creek supported a healthy mix of green algae, euglenoid algae, chrysophytes, diatoms, and cyanobacteria. Diatom diversity and species richness were excellent at the upstream site but marginal at the downstream site. Siltation was not a problem at either site. A significant shift in diatom species composition occurred from the upstream site to the downstream site, indicating moderate environmental change. The dominant diatom at the upstream site was *Cocconeis placentula*, which prefers fresh waters, hard substrates, and small concentrations of suspended sediment. The dominant species at the downstream site was *Cyclotella meneghiniana*, which prefers extremely hard and somewhat brackish waters. *Nitzschia frustulum*, also a dominant at the downstream site, has broad ecological amplitude. *Navicula salinarum*, a brackish-water species, was absent at the upstream site and common at the downstream site. [Confluence Consulting, Inc, “Biological, Physical, and Chemical Integrity of Select Streams in the Tongue River Basin” (January 2003)]



<b>Coalbed Methane</b>	<p>Carol Endicott with Confluence Consulting released a follow up report in March 2004. The study found that CBM water had the potential to negatively impact sauger (small perch pike) migrating from the Yellowstone River in Montana to Clear Creek. In addition, the study found that the Powder River was showing water quality degradation brought about by increased loading of salts from CBM discharge water. The report also noted that recent WET (Whole Effluent Toxicity) testing by the Wyoming Department of Environmental Quality demonstrated potential toxicity of CBM water when diluted in streams to a number of aquatic organisms. The study further revealed high concentrations of dissolved solids in Spotted Horse Creek – a drainage that receives continuous CBM water discharges – that may threaten a channel catfish rearing area downstream in the Powder River [see <a href="http://www.powderriverbasin.org/cbm/confluence_study/press_release_confluence.shtml">www.powderriverbasin.org/cbm/confluence_study/press_release_confluence.shtml</a>].</p>
<b>Toxicity</b>	<p>As Basin streams and rivers are continually exposed to CBM byproduct water, it is safe to assume we'll be learning more about unforeseen impacts as time progresses. An unfortunate aspect of the federal and state agency's "permit now, study later" approach is that some impacts may be difficult to remedy or mitigate if discovered too late.</p>
<b>Unforeseen Impacts</b>	<b>TREATMENT OF BYPRODUCT WATER</b>
<b>Desalinization</b>	<p>Of course, treating this water for its effluents — particularly salts — is one way to reduce many of these impacts. Early on in the scoping process for the EIS studying 51,000 wells, conservation groups and landowners asked BLM to take a very close look at two issues: 1) reinjecting the water to avoid surface impacts; and/or 2) treating it for salinity. Information was provided to BLM concerning desalinization processes, the economic and technologic feasibility of injection and several affordable treatment options including: reverse osmosis, nanofiltration, ion exchange, capacitive desalinization, freeze-thaw evaporation and biological treatment. One Montana company offered salt treatment technologies at the cost of one cent per 42 gallons. However, BLM studied none of these alternatives in its environmental analysis, and is now facing four federal lawsuits in Montana and Wyoming related to these and other omissions when authorizing 77,000 CBM wells in Montana and Wyoming. [See <i>Western Organization of Resource Councils v. Clarke, Inc.</i>, Docket No. 04-CV-00018-J (D. Wyo., filed originally in D. Mont., May 2003); <i>American Lands Alliance v. BLM</i>, Docket No. 04-CV-00019-J (D. Wyo., filed originally in D. Mont., May 2003); <i>Northern Plains Resource Council v. U.S. Bureau of Land Management</i>, D. Mont., Case No. CV-03-69-BLG-RWA (filed May 2003); <i>Northern Cheyenne Tribe, v. Norton</i>, D. Mont., Case No. CV-03-78-BLG (filed May 2003).]</p>
<b>Litigation</b>	<p>What state and federal agencies wouldn't study or require in authorizing and permitting CBM wells, however, is apparently not stopping industry with implementing treatment options in the PRB. Whether due to new plays with lesser water quality or CWA concerns pushing industry in this direction, this new trend is a welcome development. Wyoming's governor agrees and recently stated: "I do feel strongly that we need to do something about this water . . . if we don't do something soon, we're going to have more stock ponds than cattle."</p>
<b>Treatment Trend</b>	<p>Up to half of the recoverable 25 TCF of CBM in the Basin will come from the central portion, which overlies the Big George coal seam – one problem with this new play, besides quantity, is lower quality water than the early, eastern play in the Basin. To address handling this water that is higher in salinity and sodicity (SAR) compared to other CBM water, Western Gas Resources is now working on a pilot ion exchange treatment plant, which results in a brine solution that is just 1% of the total volume of water produced. The company handling the treatment is Emit Water Discharge Technology – what is disconcerting is that this treatment technology has been around for 50 years. At full capacity, the system could treat 1 million gallons per day, or about the water from 70 CBM wells (Eryn Gable, "Coalbed Methane: Treatment Promises to Make Water Discharges Suitable for Irrigation" — Land Letter, March 6, 2004).</p>
<b>Pilot Projects</b>	<p>Another example involves Anadarko, a CBM company applying new technology to its 16 well Gamma Plan of Development. In a 2002 environmental assessment completed by BLM, the agency noted that the company was finalizing a plan for large scale treating facilities. The goal of the treatment was to reduce sodium content, SAR and EC of produced water to make it more suitable for land use applications. Moreover, Anadarko sought to remove barium from the byproduct water.</p>
<b>Permit Questions</b>	<b>MAYBE WATER IS GOLD</b>
	<p>Now that companies are in the beginning stages of using water treatment as a key component of handling methods — and finding it to be economical — one has to pause and seriously reconsider Wyoming's water right permitting system in this arena. Industry has water rights to <i>all</i> of the produced water, for only a nominal application fee of \$50 for the groundwater right. [See the guidance document for permitting Coal Bed Methane (CBM) wells with the Wyoming State Engineer's Office (SEO) –</p>

**Coalbed  
Methane****Water for Sale****Mixed  
Messages****Desalinization****Reinjection  
Problems****Boom Potential**

Ground Water Division ([http://seo.state.wy.us/PDF/GW\\_CBM%20Guidance.pdf](http://seo.state.wy.us/PDF/GW_CBM%20Guidance.pdf)) As treatment options become more available and marginal costs go down, companies in charge of just a few dozen wells might find themselves with 180 or so million gallons of treated water every year to sell on the free market. With water already a scarcity in the West, and certainly in times of drought, Wyoming's state engineer may not have only given industry the farm with the permit, but also the water well. True, the royalties from the gas make about four CBM proponents for every person urging caution, but that may change if Wyoming is effectively stripped of trillions of gallons of water — all taken by industry for free.

**THE WATER 2025 IRONY**

In 2003, BLM issued Records of Decision to allow 77,000 CBM wells that will lead to over 4 trillion gallons of CBM byproduct water. The agency, within the US Department of Interior, rejected any consideration of requiring advancing water technologies — claiming economic and technological unfeasibility. It is indeed curious then, that about the same time, down the hall within Interior, Secretary Norton was claiming something quite the opposite.

In launching Interior's "Water 2025: Preventing Crises and Conflict in the West" campaign [see <http://www.doi.gov/water2025>], Secretary Norton addressed the growing concerns dealing with water shortages and increased demand in the West. The campaign has four "key tools" to help meet growing demand to meet the emerging water needs for environmental, urban, agricultural and recreational uses. One of them, interestingly enough, is "Improved Technology: New Sources of Water."

**THE INITIATIVE STATES:**

Wastewater, salty and other impaired water, can be purified to increase their utility . . . Recent reports to Congress on potential projects, along with a water desalinization research roadmap now under review by the National Research Council, should guide research. Reducing desalinization costs, for instance, could enable the cost-effective treatment of brackish groundwater in traditionally water-short areas . . . Although one alternative is to pipe fresh water from rivers and reservoirs miles away to these water short areas, desalinization could offer less expansive and drought-proof alternative[s] while providing reliable and high quality water supplies to these communities.

Interior should resolve its desalinization-schizophrenia. The technologies are there — and have been for decades — to treat this water. It is incongruous for the desalinization to play a major role in meeting the West's water needs by 2025 and at the same time, for BLM to ignore requiring (or even studying) these very same treatments for over four trillion gallons of water in the Powder River Basin that will otherwise be wasted.

**THE UPPER GREEN OF WYOMING**

The Powder River Basin is not the only place in Wyoming with CBM production and potential. Presently, several hundred wells are producing in south central Wyoming, in the Atlantic Rim and Seminole Road projects, and prospects for this general area are for up to 4,000 producing CBM wells. Significant water quantity and quality issues are present there as well.

Recall that the PRB has 38 TCF and approximately 25-to-28 TCF are recoverable. Depending on economic and technical recoverability, the Green River Basin — covering much of southwest Wyoming — may actually dwarf the play, and impacts, in the Powder. This is not to mention approximately 10,000 conventional oil and gas wells that are planned for the Upper Green — essentially Sublette County — in the next 15 years.

Presently, less than a dozen wells in the Riley Ridge CBM project are producing in the Upper Green. Water production averages about five gpm with Total Dissolved Solids (TDS) slightly higher than many PRB wells — at about 2000-to-3,200 parts per million. SARs vary from 2-to-11. This water is being reinjected underground pursuant to the Underground Injection Control program of the Safe Drinking Water Act. The few pilot wells combine for about 63,000 gallons per day for reinjection to a poor-quality receiving aquifer about 4,100 feet below the surface. Thus, the surface impacts due to CBM water in the Upper Green are virtually non-existent.

That may change. First, a nearby play in a deeper coal seam is forecasting anywhere from 200-to-400 CBM wells. Second, economics largely drive "recoverability." With gas at \$5.00/MCF, demand expected to increase steadily over the next 20 years and the potential for the billion dollar year industry boon in the form of Section 29 tax credits (a direct credit for "non-conventional" production such as CBM), we may see a lot more activity and interest. One must not forget that the PRB started with just a few wells back in the early 1990s. Finally, a second reinjection well for the pilot wells failed. Given that the water quality isn't that far off from that in the Powder, we may see surface discharge if reinjection continues to fail. With eight times the in-place CBM reserves as the Powder, CBM impacts in the Upper Green remain a major wildcard.

## Coalbed Methane

**Tom Darin** earned his J.D. from the Northern Illinois University College of Law (1993); B.A. University of Notre Dame (1990). The author is Staff Attorney and Public Lands Director at the Jackson Hole Conservation Alliance, a non-profit conservation group based in Jackson, Wyoming. Mr. Darin works on natural resource protection and focuses on forest protection, endangered species recovery and oil and gas extraction on public lands.

## Blended Basins

### Groundwater Banking

### Storage Rights

### Ownership

## CONCLUSION

Coalbed methane production remains a hot topic in the West. New plays bring new impacts and ongoing studies and monitoring are generally showing us that, in terms of impacts, we guessed at much more than we actually knew when permitting these massive-scale industrial projects. The roads, wells pads, pipelines, compressors and other infrastructure are impacts common to any oil and gas field. What is unique about CBM is the water produced – both in volume and quality. The quality of CBM water in Wyoming puts its on a fence of sorts: it is salty enough to cause concern and impacts to soils, vegetation and aquatic life while at the same time being “not so bad” as to preclude meaningful beneficial use. Thus, at the same time folks are clamoring about impacts caused by dumping this water untreated onto the ground, it is also quite reasonable to hear other people question the wisdom of wasting all of this water. As we’ve seen, however, water treatment options – long ignored by industry and the permitting agencies – are coming on line. Perhaps in the near future is a combination of treatment and/or reinjection of this water into a retrieval aquifer so that we can both avoid unnecessary surface impacts and also save this water for future generations. Lastly, Wyoming, which constitutionally holds all of this water in trust for the people, should not be handing out water rights to industry; rather, the state should retain rights to the water and have its permitting agencies take a harder look at treatment and methods to preserve this resource for future generations.

## FOR ADDITIONAL INFORMATION:

TOM DARIN, Jackson Hole Conservation Alliance, 307/ 733-9417 or email: [tom@jhalliance.org](mailto:tom@jhalliance.org)

All materials cited herein are on file with the author. Due to space constraints many footnote citations regarding technical information were deleted (inquiries may be made to the author). Additional details regarding coalbed methane development is contained in the two law review articles cited at the beginning of the article: see website: [www.wyomingoutdoorcouncil.org/programs/cbm/resources.php](http://www.wyomingoutdoorcouncil.org/programs/cbm/resources.php)

## GROUNDWATER RIGHTS IN BLENDED BASINS

by Kevin M. O'Brien, Partner, Downey Brand LLP

Commentators have long extolled the virtues of groundwater banking — i.e., the introduction of supplemental water into a groundwater basin for recovery during drought years or when no supplemental water is available for storage. (E.g., Norman W. Thorson, “Storing Water Underground: What’s the Aquifer?” 57 Neb. L. Rev. 581, 585 (1978); Victor E. Gleason, “Water Projects Go Underground” 5 Ecol.L.Q. 625 (1976) (hereinafter “Gleason”). But western water law has been slow to develop rules for allocating water within basins that contain both native and supplemental supplies (referred to in this article as “blended basins”).

In an article discussing California’s early water banking efforts, Professor Frank Trelease observed:

The next phase of the State Water Project (SWP) will be to maximize its deliveries to the southern counties, and this will require storage at the lower end of the California Aqueduct to meet peak demands and provide supplies for use during dry periods or in case of prolonged disruption of SWP service. Prominently lacking, in the eyes of the project director, is a legal framework of priorities for allocating storage rights among the various agencies that may have concurrent powers to store water within a particular basin. For instance, the Chino Basin on the eastern fringe of Los Angeles is covered by four districts that have some powers over parts of the overlying land. An illustration portraying one possible plan for ultimate solution of the basin’s groundwater problems that would include these rights, some private rights and some new SWP water shows a veritable *pousse-café* of seven layers of water stacked one above the other. While the Department of Water Resources now has the authority to undertake the physical project, it has recommended clarifying legislation on these priorities and on procedures and safeguards for implementing the program.

(Frank J. Trelease, “Conjunctive Use of Groundwater and Surface Water,” 27 Rocky Mtn. Min. L. Inst. 1853, 1883-84 (1981) (hereinafter “Trelease”).

Litigation now pending in California raises a number of issues concerning ownership of groundwater rights in a blended basin. In *In re Santa Maria Groundwater Litigation*, Superior Court of Santa Clara County, Lead Case No. 770214, municipal water purveyors are asserting preferential rights to recapture not only return flows from imported State Water Project water that recharges the basin, but also rights to recapture water released for groundwater recharge purposes from an in-basin surface reservoir. This article discusses the pertinent legal principles governing determination of groundwater rights in blended basins and briefly examines some of the legal theories being advanced in the Santa Maria litigation.



## Blended Basins

### BACKGROUND: THE SANTA MARIA LITIGATION

The Santa Maria Valley Groundwater Basin is a coastal groundwater basin located in northern Santa Barbara and southern San Luis Obispo Counties. The Basin is the principal source of water for agriculture in the Santa Maria Valley, a one-hundred forty square-mile area that constitutes one of the largest bodies of agricultural land in the central coastal region of California. It is also an important source of water for municipal use by fast-growing urban areas.

Since the late 1960s, Basin groundwater levels have fluctuated over a number of alternating five- to fifteen-year periods. Including as recently as 2002, groundwater levels in the Basin have repeatedly recovered to historical-high levels. Along the coastal portion of the Basin, groundwater elevations have remained above sea level throughout the period for which data is available. As a result, unlike the Salinas Valley Groundwater Basin to the north, the Santa Maria Basin has no history of seawater intrusion.

The periodic groundwater level fluctuations within the Basin since the late 1960s have been due to intermittent wet and dry climatic conditions, with natural recharge during wet periods supplemented by recharge along the Santa Maria River from the Twitchell Dam and Reservoir Project. The Twitchell Project is a federal project operated and maintained by a local public entity for both flood control and water conservation purposes. Water released from the Twitchell Project recharges the Basin through percolation into the streambed of the Santa Maria River.

In addition to water from the Twitchell Project, the Basin receives supplemental recharge from State Water Project (SWP) water that is imported by the City of Santa Maria and other municipal purveyors. A portion of the SWP water delivered to municipal customers percolates into the Basin after it is used by municipal customers. The litigation was commenced in 1997, just before the start of SWP deliveries. At the time of its commencement the case involved only four parties; it now involves several hundred. The case has been divided into phases and the parties recently completed the trial of Phase III, the focus of which is the issue of Basin overdraft. By *Tentative Decision* issued February 20, 2004, the trial court ruled that the Basin is not and has not been in overdraft. (As of the date of submission of this article the court had not issued its final statement of decision for Phase III.) Future phases of the case will address, among other things, the municipal purveyors' claims of rights to recapture water that recharges the Basin as a result of operation of the Twitchell Project and the importation of SWP water.

### RIGHTS TO USE OF UNDERGROUND STORAGE SPACE

Many western states provide by statute or caselaw that the owner of land has the right to the surface and everything situated beneath it. [E.g., Cal. Civil Code § 829 (West 1982). ("The owner of land in fee has the right to the surface and everything permanently situated beneath or above it."); 5 "Powell on Real Property" ¶ 706[5] (1994)(landowner has cause of action in trespass for intrusion into subsurface of land).] On its face this rule of law seems to provide landowners with a strong claim to compensation for public use of the storage space underlying their property. But the cases decided to date have tended to limit the liability of public recharge project operators, at least in situations where the private landowner cannot demonstrate that the public use has interfered with private use of the subsurface.

The most frequently-discussed case addressing the rights of a private landowner vis-a-vis the rights of a public entity engaged in artificial recharge is *Niles Sand & Gravel Co. v. Alameda County Water District*, (37 Cal.App.3d 924, 112 Cal.Rptr. 846 (1975), *cert. denied* 419 U.S. 869 (1975)) cited by some commentators for the proposition that public entities need not compensate overlying landowners for using groundwater basin storage space. (Ronald Robie, "Water Management of the Future: A Groundwater Storage Program for the California State Water Project," 11 Pac. L.J. 41 (1979).) As discussed below, however, the facts of *Niles* are unique and distinguishable from the typical groundwater banking scenario. In the author's view *Niles* is questionable authority for the broad proposition that public entities have no obligation, under any factual scenario, to compensate overlying landowners for the use of underground storage space. (See, Trelease, *supra*, at 1882.)

*Niles* was a dispute between a commercial sand and gravel company trying to dewater its gravel pits and a water district importing water to recharge the groundwater basin to prevent saltwater intrusion and augment local water supplies. The court found that the sand and gravel company, by dewatering its gravel pits and causing the discharged water (approximately five million gallons per day) to run off into San Francisco Bay, was engaged in an unreasonable use of water, (*Niles*, 37 Cal. App. 3d at 934) in violation of California's constitutional prohibition against unreasonable use. (Cal. Const. art. X § 2.) The court held that private lands are subject to a "public servitude" that allows the underlying aquifer to be recharged by a public water district so long as the recharge does not raise the water table above the "state of nature" level that would have existed without diversions from the watershed or extractions from the basin. (*Niles*, 37 Cal. App. 3d at 933-935.)

The gravel company argued that the trial court had contrived to create a new property interest for the

## Recharge

## Overdraft Issues

## Landowner Rights

## Dewatering v. Groundwater Use

**Blended  
Basins****Correlative  
Rights Doctrine****Takings****Limits to  
Storage Rights****Nebraska  
Takings  
Decision****Colorado  
Decision****Artificial  
Recharge**

benefit of a public agency, label it a “servitude,” and thereby allow the agency to escape liability to the landowner for damages in inverse condemnation. (Id. at 933.) The appellate court rejected this argument based on a questionable analytical leap. The court reasoned that, although the servitude is a burden on the property owner’s subsurface land, the doctrinal basis for the servitude is the right to use of the percolating groundwater rather than the right to use of the subsurface land. By deriving the servitude from California’s correlative rights doctrine, which originated in 1903, the court was able to conclude that it had not created a new property interest, i.e. the “servitude,” but that it had instead merely recognized a burden on the gravel company’s water rights which had existed all along. [Under the correlative rights doctrine, absent prescription, overlying landowners have priority over appropriators as to a basin’s native yield. (*Katz v. Walkinshaw*, 141 Cal. 116, 74 P. 766 (1903).)]

Because *Niles* involved a private use of water that was expressly found to be unreasonable and thus not subject to constitutional protection, the case does not resolve the issue of whether a public entity may spread groundwater in a manner that precludes an overlying landowner from making a valid use of the subsurface of his real property without compensation. Given the recent direction of federal takings jurisprudence (e.g., *Dolan v. City of Tigard*, 512 U.S. 374 (1994)), it is questionable whether the courts would sanction public use of an aquifer to the detriment of a landowner’s valid private use without the requirement of compensation.

*City of Los Angeles v. City of San Fernando* (14 Cal.3d 199 (1975)) also addressed the issue of use of the underground storage space, albeit in a context that essentially involved only competing public entities. The court reaffirmed the ruling in *City of Los Angeles v. City of Glendale* (23 Cal.2d 68, 76-77, 132 P.2d 574 (1943)) which had extended the provisions of California Water Code section 7075 to the addition and withdrawal of water in an underground basin. (*San Fernando*, 14 Cal. 3d at 260, 537 P.2d at 1295.) Section 7075 provides that “[w]ater which has been appropriated may be turned into the channel of another stream, mingled with its water, and then reclaimed; but in reclaiming it the water already appropriated by another shall not be diminished.” In its analysis of this issue, however, the *San Fernando* court failed to draw a clear distinction between the right to use of the underground storage space and the right to recapture stored water. Moreover, by relying on Water Code section 7075, the court implicitly recognized that the right of a public entity to store water in an underground aquifer is subject to certain limitations, including the requirement that the storage of imported water underground not impair native groundwater rights. (See Gleason, *supra*, at 640)

Other western states have addressed the issue of rights to the use of underground storage space in mixed fashion. In *Central Nebraska Public Power and Irrigation District v. Abrahamson*, (413 N.W.2d 290 (Neb. 1987)) the Nebraska Supreme Court rejected a challenge by landowners who claimed that a statute allowing artificial recharge beneath their land constituted a taking of their exclusive right to the storage capacity of the underlying aquifer. The court based its ruling on a provision of the Nebraska Constitution (Neb. Const. art. XV, section 4) and the correlative rights doctrine, which allows a landowner to make a reasonable beneficial use of water on the land which he owns. The court held that the statute would not deprive a landowner of protected property rights unless it “prevents him from doing an act which he desires to do or diminishes the enjoyment or profit which he would otherwise derive from his property.” (*Central Nebraska*, 413 N.W.2d at 299)

In Colorado, the courts have upheld a landowner’s exclusive ownership of the bed of a non-navigable stream and the owner’s right to exclude others from the surface of the water, even though the water itself belongs to the people of the state. (*People v. Emmert*, 597 P.2d 1025 (Colo. 1979).) One commentator has suggested that the common law principles underlying this decision “could support an argument that a landowner can prevent others from storing water in aquifers beneath the land without his or her consent.” (Charles B. White, “Sustainable Use of the Denver Basin,” Natural Resources Law Center, Univ. of Colo., Occasional Paper Series (1995) at 10)

Although neither *Niles* nor *San Fernando* deals directly with underground storage priorities, each implies that overlying water agencies have a prior right to store enough water underground to assure an adequate annual water supply for the overlying community. (See Gleason, *supra* note 3, at 665.) Such a limitation would be consistent with the correlative rights doctrine on which *Niles* is purportedly based.

**RECAPTURE OF IMPORTED WATER**

The *San Fernando* decision defines the right to recapture artificial recharge from imported water as “an undivided right to a quantity of water in the ground reservoir equal to the net amount by which the reservoir is augmented by [imported water].” (14 Cal.3d at 262, 537 P.2d at 1296.) Thus the measure of the recapture right is the net amount of additional groundwater attributed to the imported supply and the storer bears the risk of loss. (See, Gleason, *supra*, at 645.)

**Blended  
Basins****Coastal Basin****Accounting****Preferential  
Rights?**

How the *San Fernando* recapture rules will be applied in the context of a coastal basin that is constantly spilling to the ocean remains to be seen. In *Santa Maria*, overlying landowners will argue that importation and use of State Water Project water by the City of Santa Maria and other municipal purveyors does not result in net augmentation of the Basin because there is substantial and constant outflow from the Basin to the Pacific Ocean. (In a coastal basin such outflow is necessary to prevent seawater intrusion.) The overlying landowners will also argue that the City is physically incapable of recapturing return flows from imported water because recharge from imported water occurs at a location that is down-gradient and some distance away from the City's groundwater production wells. To a great extent, then, the determination of the nature and extent of the City's rights to recapture return flow from imported water will turn on the unique physical facts of the case, as ultimately determined by the trial court.

From a policy standpoint, accounting for imported water that recharges a basin on a "last-in, first-out" basis is consistent with accounting methods utilized by the federal Bureau of Reclamation in connection with the storage of "non-project" surface water in federal reservoirs. The analogy to surface reservoirs is appropriate because surface reservoirs, like the Basin in *Santa Maria*, carry a risk of spill (e.g., loss due to storage overflow). When multiple parties seek to utilize limited storage space in a basin or reservoir that carries a risk of spill, it is necessary to allocate the risk of spill based on a determination as to which party has first priority to utilize the available storage space. In the groundwater context such priority would appear to rest with overlying landowners and the non-overlying storer would appear to bear the risk of loss. (See, Gleason, supra, at 645)

**RECAPTURE OF WATER RELEASED FROM SURFACE RESERVOIR**

Certain of the municipal purveyors in Santa Maria have asserted that the safe yield of the Santa Maria Basin does not include water that recharges the Basin as a result of operation of the Twitchell Project. Further, they assert that municipal purveyors, who purportedly have paid a large share of the cost of construction and operation of the Project (this fact is in dispute), have a preferential right to the portion of the Basin supply attributable to Twitchell recharge. In its *Tentative Decision regarding Phase III* the trial court rejected the argument that recharge from the Twitchell Project should not be included in the Basin's safe yield. The issue of whether municipal purveyors have a preferential right to the portion of Basin supply attributable to Twitchell recharge will be litigated in future phases of the case.

The municipal purveyors in *Santa Maria* rely principally on *San Fernando* for the proposition that one who develops an in-basin storage reservoir has a preferential right to the portion of Basin supply attributable to Twitchell Recharge. They argue that a developer of water who incurs the expense of procuring a new and additional water supply by salvaging it from loss to the ocean is entitled to "the fruits of his expenditures and endeavors in bringing into the basin water that would not otherwise be there." (*San Fernando*, 14 Cal.3d at 261)

**CONCLUSION**

There is no California case which holds that one who develops surface storage within the watershed of a groundwater basin acquires a preferential right to that portion of the groundwater supply that is attributable to stored surface water. *San Fernando* and the cases upon which it relies involved the determination of rights to recapture imported water that recharges a basin. [E.g., *Crane v. Stevinson*, 5 Cal.2d 387, 389 (1936).] The *San Fernando* court treated water flowing in streams in the watershed that had been impounded and released as "native" water. *San Fernando*, 14 Cal.3d at 248 n. 39, 251. This approach is consistent with the earlier decision in *City of Los Angeles v. City of Glendale*, 23 Cal.2d 68, 73-74 (1943), in which the court stated that "waters that are released to rejoin the body of water of which they are naturally a part are treated as natural parts of such streams." There is simply no support under California or western water law for the proposition that stored water should be treated the same as foreign water in the determination of water rights.

Finally, adoption of the legal principles espoused by the municipal purveyors in *Santa Maria* would have far-reaching implications for the administration of water rights throughout the West. The assertion of preferential rights to groundwater supplies by reservoir operators such as the federal Bureau of Reclamation would inject unparalleled uncertainty into the administration of water rights, and would likely trigger widespread litigation.

**FOR ADDITIONAL INFORMATION:**

KEVIN O'BRIEN, Partner, Downey Brand LLP, Sacramento, California. 916/ 444-1000 or email: kobrien@DowneyBrand.com

**Kevin O'Brien** is counsel of record for the plaintiff in the Santa Maria Groundwater Litigation, discussed in this article.



## Platte River

## Commonalities

## “Ecosystem Restoration”

## Restoration Components

## PLATTE RIVER ECOSYSTEM RESTORATION

AN ENVIRONMENTAL PERSPECTIVE

by Daniel F. Luecke

## ECOSYSTEM RESTORATION PROCESS FOR LARGE SYSTEMS

While still in formative stages, certain aspects of large “ecosystem restoration projects” bear common characteristics worthy of examination. This article will discuss some of these commonalities, with specific reference to Platte River restoration efforts — with which your author continues to be closely involved.

Looking at the watershed scale, the best examples of large ecosystem restoration efforts include: the Sacramento-San Joaquin delta (CalFed process); the Columbia River Basin; the Florida Everglades; the Upper Colorado River Basin, and the Platte River Basin.

ALL SHARE CERTAIN CHARACTERISTICS, INCLUDING:

- Multiple jurisdictions within one state
- Multiple interested parties in terms of user interests
- Multiple agency involvement at both the state and federal levels
- Multiple state involvement (excepting the Sacramento delta and the Everglades)
- Transformation involving both changes in land use patterns and basin hydrology

The term ecosystem restoration has a number of possible definitions. For this article the term will mean the re-establishment of a balance in ecosystem structure and function to meet the needs of plants, animals, and human communities. This definition is part scientific (structure and function) and part political (meeting the needs of human communities). Science constrained by political reality makes restoration feasible — but complicates the science.

Ecosystem restoration processes are inherently experimental. There is very limited experience in this area, with no common set of guiding principles. For large systems in particular, there are few, if any, examples of success. By its nature, a restoration process must be adaptive, i.e., rely on an approach that is incremental and that embodies monitoring, assessment, and evaluation protocols that are sufficient to provide information on the effects of restoration activities. Further, these monitoring and assessment protocols must be linked to the restoration enterprise in a way that allows modifications and enhancements of restoration activities.

LARGE ECOSYSTEM RESTORATION ENTAILS:

- **DEVELOPING A VISION OF RESTORATION:** Describing what restoration of balance in the structure and function of the ecosystem would look like (not necessarily a straightforward task, given that limited data may be available on structure and function)
- **DEFINING THE PROBLEM:** Determining the geographic bounds of the ecosystem and definitions of the ecological processes, habitat, species, and interactions (both spatial and intertemporal) affected by the problem
- **ELABORATING GOALS & OBJECTIVES:** Articulating clear, tangible, and measurable outcomes that relate to the vision of restoration
- **CONSTRUCTING CONCEPTUAL MODEL(S) OF RESTORATION:** Based on available data and knowledge of structure and function, these model(s) should highlight key uncertainties and data gaps while leading directly to potential restoration actions
- **DEVELOPING AND INITIATING RESTORATION MEASURES (EXPERIMENTATION):** Development and initiation of targeted research (to resolve critical issues about structure and function), pilot or demonstration projects (to determine the practicality and effectiveness), and/or full-scale implementation measures (where there is reasonable certainty of desired restoration outcome)
- **MONITORING OUTCOMES:** Data gathering to monitor ecological indicators (e.g., abundance, macro-habitat characteristics, rates of change, nutrient cycling, energy flow, etc.) in terms of established goals and objectives
- **ASSESSING AND EVALUATING OUTCOMES:** Whether restoration actions have met the stated goals and objectives
- **ADAPTATION:** Using monitoring data and its assessment to modify problem definition, goals and objectives, conceptual model(s), and restoration actions

[Adapted with reference to: CalFed Bay Delta Program, Ecosystem Restoration Program: Strategic Plan for Ecosystem Restoration (revised draft, June 1999), see [http://calfed.ca.gov/adobe\\_pdf/revised\\_draft\\_eis\\_eir/304/strategic\\_introduction\\_chapter6.pdf](http://calfed.ca.gov/adobe_pdf/revised_draft_eis_eir/304/strategic_introduction_chapter6.pdf)].

## Platte River

## Differing Perspectives

## GOALS OF ECOSYSTEM RESTORATION: DIFFERING VIEWS

In large ecosystem restoration processes, there is invariably an issue of compliance with federal law, usually either the Clean Water Act (33 U.S.C. §§ 1251-1387), the Endangered Species Act (16 U.S.C. §§ 1531-1534), or both. With the force of federal statute often moving the process, a question arises as to the fundamental motivation of the various interests involved. The legal dynamics of ecosystem restoration tend to reverse the dynamics of traditional environmental advocacy efforts. Instead of working to prevent future activities that degrade environmental quality, reversing yesterday's damages predominates. The relationships of the various stakeholders to the laws and processes drive decision-making and action.

## FOUR COMMON PERSPECTIVES INCLUDE:

- Federal regulatory agencies: Seek compliance with the applicable statute and regulations
- State resource agencies: Seek compliance, but don't want to overburden the state's resource users
- Resource users: Seek certainty with respect to the establishment of goals, development of restoration actions, and costs (once in place, they don't want any changes)
- Environmentalists: An adaptive approach that will lead to actual restoration of ecosystem structure and function, and restoration measures that are not overly constrained by existing resource use patterns

It remains an open question as to whether these very different perspectives can be accommodated by current restoration processes. One reason for optimism may be the "cushion" created by the way in which resources like water have been allocated in the past. Table 1 illustrates this point (see below). The upper half of the table shows the portion of water use in western states (excluding Oregon and Washington) that goes to the agricultural sector and the portion that goes to all other purposes. Agriculture uses the lion's share in every state. On the other hand, a comparison of the earnings figures for the combined service and manufacturing sectors with earnings in the agricultural sector presents exactly the opposite relationship (as a percentage of total earnings in each state; see the lower half of Table 1). Agricultural earnings are very low relative to major sectors like manufacturing and services.

What this suggests is that a reallocation with fair compensation could occur with very limited economic consequences. [For a discussion of the economic consequences of water transfers, see Robert A. Young, "Economic Impacts of Transferring Water from Agriculture to Alternative Uses in Colorado" — Colorado Water Resources Research Institute Report No. 122 (1983).]

**Water Use by Agriculture and Municipal and Industry Sectors  
With Percent Earnings for Agriculture and for Manufacturing and Services.\***

STATE	AZ	CA	CO	ID	MT	NE**	NV	NM	UT	WY
USE	1990 WATER USE (percent of total and, in brackets, in millions of gallons/day)									
MUNICIPAL & INDUSTRY	18 [1181]	19 [6789]	7 [938]	2 [440]	3 [248]	27.2 [687]	19 [654]	9 [308]	17 [756]	9 [723]
AGRICULTURE	82 [5389]	81 [28,311]	93 [11,762]	98 [19,260]	97 [9052]	72.8 [18,346]	81 [2826]	91 [3032]	83 [3624]	91 [7187]
EARNINGS	1990 PERCENT EARNINGS									
SERVICE & MANUFACTURE	90.6	91.0	89.8	81.1	85.5	95.3	86.5	87.6	90.9	73.9
AGRICULTURE	1.4	1.8	2.2	10.4	5.8	4.8	.6	2.6	1.6	2.5

\* With the exception of Nebraska, data in the upper half of the table are from University of Colorado Center for the New West's Tracking Change in the West (Feb. 8, 2000). The Nebraska water use data are taken from Water Use in Nebraska: 1995, Nebraska Natural Resources Commission (April 1998). The data in the lower half of the table are taken from U.S. Bureau Census, County and City Data Book (1994). \*\* Nebraska consumptive water use data are reported here. Hydropower, not included, is the single largest water use category in the state.

**Platte River****Litigation**

**PLATTE RIVER RESTORATION**  
LITIGATION, REGULATION, & THE MARKET

Few, if any, of the major habitat restoration projects are without a history of litigation. This is certainly true for the Platte River — as it is for the efforts in the Upper Colorado River, the Everglades, and the Columbia River [see “For Additional Information” — below]. In fact, it is doubtful whether any of these restoration projects would exist were it not for litigation. Litigation remains part and parcel of current efforts at restoration in the Columbia River. In other basins, litigation has been set aside — at least for the moment — in favor of collaboration in the context of federal regulatory authority. This is the case in the Platte River Basin, where the states of Colorado, Nebraska and Wyoming and the Department of the Interior entered into the “Cooperative Agreement for Platte River Research and Other Efforts Related to Endangered Species Habitat Along the Central Platte River, Nebraska,” July 1, 1997 (“Platte River CA”). However, the possibility of future litigation is an important stimulus to keep projects moving, even if forward movement is sometimes undetectable.

**Water Allocation**

Debate on issues of water use sustainability and environmental protection in the Platte River Basin has extended over at least the last two decades. At issue is the reasonable allocation of water among: irrigated agriculture; municipalities; and the natural habitat. Major components in this work include the restoration and protection of whooping crane, piping plover, and interior least tern habitat.

The Platte River CA’s habitat protection program for the Big Bend reach of the Platte River in Nebraska encompasses the entire watershed and contains both water protection (130 to 150,000 acre feet of flow shortage reductions in the Big Bend reach) and land protection objectives. Participants are required to put in the measures to reach these objectives on a precise timeline over the next several years.

**Flow Depletion**

Analysis of Central Platte historic flow regimes reveals that the river has changed dramatically in the last 100 years [see John G. Sidle and Craig A. Faanes (US Fish and Wildlife Service, Northern Prairie Wildlife Research Center) “Platte River Ecosystem Resources and Management, with Emphasis on Big Bend Reach in Nebraska” — Table 1 (July 16, 1997) at [www.npwrc.usgs.gov/resource/othrdata/platte2/platte2.htm](http://www.npwrc.usgs.gov/resource/othrdata/platte2/platte2.htm)]. Spring peak flow, which determines basin geomorphology, has been all but eliminated.

**Feasible Options**

The Platte River CA represents the first step in creating flow patterns that reverse this depletion. A challenge facing the signatories to the agreement is identification and development of a set of technically, economically, and environmentally feasible options for water management and reallocation that will serve as the foundation for flow-based habitat improvements [see Boyle Engineering Corporation, “Water Conservation/Supply Reconnaissance Study: Final Report” — prepared for Governance Committee of Cooperative Agreement for Platte River Research, 2-1 — 2-7 (December 1999)]. The US Fish and Wildlife Service (USFWS) has established flow targets which it believes must be met to reverse the course of habitat decline [see “Instream Flow Recommendations for the Central Platte, Nebraska” — Enc. 1 to Department of the Interior’s Amended Comments Under §10(j) of the Federal Power Act before the Federal Energy Regulatory Commission on Project No. 1835 (Nebraska Public Power District) and Project No. 1417 (Central Nebraska Public power and Irrigation District), (August 12, 1994)]. At some times of the year there are surplus flows (winter and early summer), while at others times there are shortages below targets (spring and fall). The challenge is to reduce shortages both by managing surplus flows (i.e., re-timing flows) and by reallocating water uses from consumption to habitat protection.

**ACCOMPLISHING PLATTE RIVER RESTORATION GOALS****Federal Regulation****ESA Oversight**

The Platte River CA operates under the regulatory authority of the federal Endangered Species Act (ESA), 16 U.S.C. §§ 1531-1534, and is intended to lead to a program that will be signed by the governors of Colorado, Wyoming, and Nebraska and the Secretary of Interior. Once signed, the Platte River CA will serve as a “reasonable and prudent alternative” in the Section 7 (ESA) biological opinion process. The assessment of whether the parties are making “sufficient progress” is in the hands of the USFWS. In the Platte, USFWS can reopen any biological opinions that have been issued under the CA. The forcing function of habitat restoration thus remains the federal regulatory authority.

**ROLE OF MARKETS IN THE CONTEXT OF REGULATION****Markets**

The Platte River basin is one of the most important ecosystems, and economic areas in the Rocky Mountain-High Plains region. The River has played an essential role in both defining the character of the region ecologically and in sustaining the economy. However, its environmental value has often been ignored in the pursuit of narrowly defined economic goals. The challenge, from an environmental perspective, is to correct the resulting imbalance in an equitable and efficient fashion. Markets offer the most reasonable and flexible option because they can create the economic incentives to reallocate water and associated land resources based on willing-buyer — willing-seller transactions.



**Platte River****Dewatered  
System**

The real cost and real value of water and land must be reflected in their allocation over the long-run. Water is invariably under-priced — leading to its misallocation and the detriment of natural systems (again, see Table 1 above).

The Platte River is dewatered by a system based on 19th century concepts of entitlement, pricing, and allocation — concepts that established ownership rights and market value only after water was diverted [see Charles F. Wilkinson, “Aldo Leopold and Western Water Law: Thinking Perpendicular to the Prior Appropriation Doctrine” — 24 Land & Water L. Rev. 1-14 (1989)]. Historically, all the incentives were designed to encourage water withdrawals. In a semi-arid region like this, where over 65 percent of naturally occurring species depend, at least in part, on aquatic and riverine habitat, the resulting environmental problem is that the natural flora and fauna are now rare and at risk. The 65 percent figure is intended to be a conservative estimate based on a review of a number of studies on the importance of wetlands and riparian areas in the Southwest and Rocky Mountain regions. [See for example, Environmental Defense Fund, “How Wet Is a Wetland? The Impact of the Proposed Revisions to the Federal Wetlands Delineation Manual” 81-87 (January 1992); David E. Brown, “Biotic Communities of the American Southwest-United States and Mexico” — 4 Desert Plants 1-342 (1982); Fritz L. Knopf, R.R. Johnson, et al. “Conservation of Riparian Ecosystems in the United States” — 100 Wilson Bull 272-284 (1988); M.M. Brinson, B.L. Swift, R.C. Plantico, and J.S. Barclay, “Riparian Ecosystems: Their Ecology and Status” (USFSW, 1981); “Verde River Corridor Project, Verde River Corridor Project: Final Report and Plan of Action” (Arizonal State Parks 1991); and J.M. Brode and R. B. Bury, “The Importance of Riparian Systems to Amphibians and Reptiles, in Proceedings of the California Riparian Systems Conference” — 30-36 (University of California, Davis 1984). The associated economic problem is one of correcting this misallocation without serious disruption to the region’s economic interests.

**Long-Term  
Values**

The eventual objective, again from an environmental perspective, is the allocation, use, and protection of water and associated lands in ways that represent their true long-term values — involving measures which discourage waste and reward cooperative effort. The non-sustainable behavior to be changed allocates these resources in a way that accounts only for traditional market effects — reflecting ownership patterns that were established in the context of a system that overlooked natural values.

**Avoiding  
Abruptness**

The use of market mechanisms anticipates the fact that abrupt changes in the reallocation of water — while they might have positive environmental consequences — could create economic discontinuities, associated adverse community impacts, and substantial political resistance. The concept of using markets to allocate and protect natural and environmental resources has a long history. [See, e.g. Orris C. Herfindahl and Allen V. Knesse, “Quality of the Environment: An Economic Approach to Some Problems in Using Land, Air, and Water” (Johns Hopkins Press 1965). For a recent comprehensive review, see, *The RFF Reader in Environmental and Resource Management*, Wallace E. Oates, ed. (Johns Hopkins University Press 1999). Market-incentive based reallocation programs affect gradual change, account for equity interests, and face less political resistance. Introducing and protecting environmental values through markets can, in a very fundamental way, ensure long-term sustainable use of water resources and economic vitality by creating water allocation incentive systems that encourage efficiency, quantify the value of instream uses, and discourage system-scale inefficiencies.

**THE ROLE OF SCIENCE**

Science plays a fundamental role in: 1) the construction of conceptual models; 2) the development and initiation of restoration measures; 3) the monitoring of outcomes; 4) the assessment and evaluation of outcomes; and 5) the restatement of the problem. From the development of conceptual models through data gathering, monitoring, assessment, and redefinition, science and the scientific method must be the guide. Sound, peer-reviewed science, plays a crucial role in the restoration of large ecosystems.

However, the role of science in habitat restoration differs from simply developing and testing hypotheses. It is different both because the science is necessarily “integrative” rather than analytic. Also, restoration has a fundamentally important political component. One of the most important attributes that distinguishes the integrative approach from the analytic is the application of statistics. The integrative approach is concerned with minimizing the risk of accepting a false hypothesis while the analytic approach is concerned with minimizing the risk of rejecting a true hypothesis. In the effort to minimize the risk of implementing a measure that will not lead to restoration there is always a call for more data and more study — particularly by those who see their interests threatened — before any action is taken.

In the Platte process, the National Academy of Sciences (NAS) recently released an assessment which — while initiated, in part, at the insistence of CA opponents — largely endorses USFWS habitat recovery objectives (see below).

**Integrative  
Application**

## Platte River

### Process Impediments

#### Science and Politics in Large Ecosystem Restoration Projects: Major Issues

There are a number of characteristics common to the interaction of science and politics in large ecosystem restoration projects.

MAJOR COMMONALITIES INCLUDE:

**TAILOR-MADE FORUMS:** Ecosystem restoration rarely, if ever, has standard operating rules, a situation which always puts minority representatives at a disadvantage. There are an enormous number of discontinuities, such as lax enforcement of rules of procedure, changing cast of participants, and haphazard attendance at meetings. Progress is thereby rendered scattered and unfocused.

This has certainly been the case for the Recovery Implementation Committee in the Upper Colorado (the committee established pursuant to Sections 2 and 4 of the ESA, see USFWS, "Recovery Implementation Program" — at 3-1). There is not a substantial body of literature on this feature of large scale ecosystem recovery process, but discussion of some of the shortcomings can be found in: Gail Bingham, "Seeking Solutions: Exploring the Applicability of ADR for Resolving Water Issues in the West, Report to the Western Water Policy Review Advisory Commission" — 30-32, (October 1997); Douglas S. Kenney and William B. Lord, "Analysis of Institutional Innovation in the Natural Resources and Environmental Realm: The Emergence of Alternative Problem-Solving Strategies in the American West" (Natural Resources Law Center, University of Colorado Law School 1999).

**SCIENTIFIC UNCERTAINTY SLOWS PROGRESS:** The data to develop conceptual models and establish restoration actions are seldom sufficient to dispel all doubt. This inescapable uncertainty is often used by participants to call for more data before any action is taken. It is very difficult to overcome this resistance to action.

**FEW ADVERSE CONSEQUENCES FOR DELAY TACTICS:** While some delay is inevitable, there is a reluctance to impose consequences for those who purposefully delay. As a result, sanctions are rarely if ever prescribed or imposed.

**PROCESS PACE NOT A COMMON INTEREST:** It is in the interest of some parties (usually environmentalists) to have process move quickly, while, for others (usually resource users) there is an interest in a slow pace. From an environmental perspective, this alignment of interests makes it very difficult to force the pace.

**FUNDING INVOLVES OPPONENTS:** Funds come from several sources including federal agencies, state bureaus, and resource users. State funding implicates state legislatures. With funding authority, legislatures often seek oversight, again affecting process schedules.

**DEPENDENCE ON STATE LAW:** Almost always the process depends on use of (or change in) state law, again implicating state legislatures, which can be hostile forums. State institutions are frequently unable or unwilling to carry the burden placed on them by agreements negotiated within the collaborative process.

**STALEMATES:** In a multi-party process, influence of a single interest is often minimal. At best, one party can usually do little more than form a coalition (or voting block) to stop an action it does not support. It cannot move the process in a direction it thinks it should go. When minority interests with relatively small staffs are faced with this situation, they often see the "opportunity cost" of participation is very high compared with what they are able to achieve.

### Redistribution

#### Ecosystem Restoration in the Platte Process: Flawed but Possible

Ecosystem restoration is first and foremost a process of redistribution, i.e., the reallocation of resources from narrowly defined economic activities to environmental purposes. Vested interests with a stake in the former resist this redistribution with great energy. For example note the litigation in *Bennett v. Spear*, 117 S.Ct. 1154, 1157, 1159-1160 (1997); *Carson-Truckee Water Conservancy Dist. v. Watt*, 549 F.Supp. 704, 708 (D.Nev. 1982); *Barcellos and Wolfson, Inc. v. Wetlands Water Dist.*, 849 F.Supp. 717, 720-721, (E.D. Cal. 1993). As described above, all of the major restoration efforts have elements of litigation and regulation.

In the Platte process, the market element is also present. Whether this component will make success more likely remains an open question. In her comparison of restoration efforts in the Colorado and Columbia Rivers, Mary Wood (Professor of Law, University of Oregon) concludes that the chance of success, i.e., substantially restoring the ecosystem, while slim, is greater in the Columbia than in the Colorado. She bases her conclusion on the role of litigation in the Columbia as opposed to that of the recovery implementation plan in the Colorado which relies on the use of regulation and the market. [See Wood, "Reclaiming the Natural Rivers" — at 230-236 and 284-286 respectively (see "For Additional Information" — below).] She may be right in this particular case, but I think that the ultimate redistribution of natural resources from traditional production (however inefficient) to protection can only be accomplished through a market structured by the presence of regulation.

### Success Probabilities

## Platte River

Ratcheting  
Down?

## FERC

## NAS Study

In assessing the Platte process specifically, John Echeverria concludes that what he labels a collaborative watershed planning process:

"...is fundamentally flawed because it is too heavily weighted in favor of parochial economic interest, lacks clear procedural and substantive standards, and is almost tailor made to produce endless gridlock...[and] if the process succeeds in generating any type of program...the solution will almost certainly be a failure, both in absolute terms and relative to what could reasonably be achieved through traditional regulation..."

John D. Echeverria, "No Success Like Failure: The Platte River Collaborative Watershed Planning Process" — 25 William & Mary Env. Law & Pol. Rev., 560, 559-604 (2001).

Among other things, Echeverria bases his conclusions on what he sees as the Platte CA watershed scale process "ratcheting down" the USFWS' long-term objectives and undermining strong ESA compliance conditions already in existence. Those conditions were in place due to the Federal Energy Regulatory Commission's (FERC) re-licensing of a major North Platte dam in Nebraska that was underway at the time the Platte CA was signed. I disagree with his general conclusion, though his underlying concern on delay (deadlock) is one I share.

The watershed is the right unit of control from a scientific, political, and common sense prospective. It includes all the system features that affect the Central Platte. It includes all the important actors. It recognizes the differences between the South Platte and the North Platte. Finally, because it's the whole system, there is a greater likelihood that the Platte CA process can deal with the unexpected. Regarding ratcheting down and undermining FERC, USFWS had tried, unsuccessfully, to impose higher expectations in previous Platte ESA processes and there is no clear indication that USFWS would have compelled compliance with higher habitat goals in the biological opinion it was writing for FERC.

In January of 2003, a major study of the Platte River recovery process described it as "...a story yet to fully unfold," in part because of the controversies that surrounded the Fish and Wildlife Service's habitat science and associated recovery measures (Freeman, David M., et al, "Organizing for Endangered and Threatened Species Habitat in the Platte River Basin" — presented at the Colloquium on Comparative Study of Ecosystem Restoration Projects, Center for Ecosystem Science and Policy, University of Miami Law School, January 2003). Now, with the release of a National Research Council report strongly endorsing the Service's work, the story of recovery moves much closer to being told. National Research Council of the NAS, "Endangered and Threatened Species of the Platte River" — The National Academies Press, Washington, D.C., 2004 (see [www.nas.edu/](http://www.nas.edu/)).

**FOR ADDITIONAL INFORMATION:**

DANIEL LUECKE, 303/ 443-5815 or email: [luecke5@comcast.net](mailto:luecke5@comcast.net)

**Daniel Luecke** is an environmental scientist and water resources expert living in Boulder, Colorado. For the past 20 years he has been engaged in issues dealing with the scientific aspects of the water, energy, and land use cases in the Rocky Mountain region. He has been an environmental participant in the Platte River recovery process since 1994 and currently serves as the National Wildlife Federation's representative on the Platte.

## CLEAN WATER ACT, SEE:

- Alfred R. Light, "The Myth of Everglades Settlement" — 11 St. Thomas L. Rev. 55, 57, 60-67 (Fall 1998) (Everglades)
- Dale Pontius, "Colorado River Basin Study: Report to the Western Water Policy Review Advisory Commission" 19 (August 1997)

## ENDANGERED SPECIES ACT, SEE:

- Leo Eisel & J. David Aiken, "Platte River Basin Study: Report to the Western Water Policy Review Advisory Commission" — vii, 7-28 (August 1997)
- Dale Pontius, Colorado River Basin Study: Report to the Western Water Policy Review Advisory Commission 19, 41-42 (August 1997)
- Michael C. Blumm, "The Amphibious Salmon: The Evolution of Ecosystem Management in the Columbia River Basin" — 24 Ecology L.Q. 653, 663-666 (1997)
- Mary C. Wood, "Reclaiming the Natural Rivers: The Endangered Species Act as Applied to Endangered River Ecosystems" — 40 Ariz. L. Rev. 197, 199-203, 225-286 (1988) (Columbia River and Colorado River).



## HATCHERY FISH / WILD FISH

## LEAKED DOCUMENT STIRS CONTROVERSY

A major story is shaking the west coast earlier than anticipated following the leak of a one-page draft document from the Bush Administration. The document states that hatchery fish will be counted, along with wild fish and "mixed populations" of natural fish and hatchery fish, when the agency makes determinations about protection under the federal Endangered Species Act (ESA).

The document, entitled "Consensus Draft Hatchery Listing Policy: 25 March 04" goes on to state that "Hatchery fish that are genetically no more than moderately divergent from a natural population in the ESU [i.e., evolutionarily significant unit] are considered part of the ESU, will be considered in determining whether an ESU should be listed under the ESA, and will be included in any listing of the ESU."

Robert Lohn, Northwest Regional Director of NOAA Fisheries, spoke with The Water Report (TWR) on May 3rd regarding the controversy. "The one page document that was leaked was not the whole policy. The policy will be released at the end of May. We expect to also release the listing reviews on the 26 currently listed species and for a 27th species proposed for listing at that same time. This will provide everyone with the new policy and examples of how we will apply it." NOAA Fisheries is interested in hearing from the public. "Public views on how to best achieve salmon recovery are very important to the agency," Lohn Stated.

The new policy on hatchery salmon will be published at the end of May in the Federal Register and then opened to public comment. It was issued in response to the now famous decision by US District Judge Michael Hogan in *Alsea Valley Alliance v. Evans*, 161 F.Supp.2d 1154 (Dist.Or. 2001), where Judge Hogan ruled that the National Marine Fisheries Service (NMFS) must include hatchery salmon in ESA listings, where NMFS has included those fish as components of the core ESUs.

Russell Brooks of the Pacific Legal Foundation (PLF), which represented the plaintiffs in *Alsea Valley*, told TWR that this new policy "should affect all listings if it is applied correctly. Hatchery fish ought to be counted alongside wild fish." PLF is currently involved in four different lawsuits in federal district courts challenging salmonid listings. In *Oregon Grange v. Evans* (Oregon District Court), Case No. 02-6044-HO, before Judge Hogan, PLF is seeking to invalidate the listing of the Klamath coho salmon; *Common Sense Salmon Recovery v. Evans* (D.C. District Court) is challenging chinook salmon listing in the Columbia River and the Puget Sound areas; *Modesto Irrigation District v. NMFS* involves the Central Valley of California steelhead (Eastern District of California); and in a complaint filed on March 1st, *Washington Grange v. Evans* (Eastern District of Washington) is challenging Columbia River and Willamette river steelhead listings.

The controversy is not likely to be resolved easily. In the March 26th issue of Science magazine, a team of scientists published a report entitled "Hatcheries and Endangered Salmon." The report concluded that hatchery fish should not be counted with wild salmon when ESA determinations are made, because conservation hatcheries are unproven in restoring threatened and endangered populations of salmon to sustainable levels, and may cause more harm than good. The authors of the Science article urged that NMFS use a more legally defensible definition of an ESU and said that artificially propagated individuals should not be included in ESUs, even if they are indistinguishable at indicator genetic loci. "Hatcheries generally reduce current fitness and inhibit future adaptation of natural populations. Hence, the legal definition of an ESU must be unambiguous and must exclude hatchery fish." [Summary from Science, March 26, 2004.]

Robert Paine, the lead author of the report and an ecologist at the University of Washington, was quoted as saying that the "current political and legal wrangling is a sideshow to the real issues. We know biologically that hatchery supplements are no substitute for wild fish."

**For info:** Janet Sears, NMFS Public Affairs Officer, 206/ 526-6150, email: Janet.Sears@noaa.gov, website: www.nwr.noaa.gov; Russell Brooks, PLF, 425/ 576-0484, email: rb@pacificlegal.org, website: www.pacificlegal.org

## TRINITY RIVER FLOWS CA

A 9th Circuit Court ruling on April 23 will significantly increase flow in the Trinity River. The ruling came as a result of a Motion for a Stay filed by the Hoopa Valley Tribe. In December 2002, US District Court Judge Wanger limited the available volume of water to 453,000 acre-feet (af) pending completion of a final Supplemental Environmental Impact Statement. *Westlands Water Dist., et al v. U.S. Department of the Interior, et al*, 275 F.Supp.2d 1157 (2002). The new ruling increases that volume to 647,000 af for this year only.

The revised 2004 flow schedule will be finalized by Interior, based on a recommendation made by the Trinity Management Council, to achieve a wide variety of physical and biological objectives. This schedule will benefit smolt (juvenile salmon and steelhead) growth and survival in late spring and early summer and achieve substantial geomorphic benefits by flushing large accumulations of fine sediment that have been deposited over the past two years, move/redeposit gravel, and scour 1-2 year old riparian vegetation that has re-encroached along the channel's edge.

Current releases from Lewiston Dam to the Trinity will continue at 300 cubic feet per second (cfs) through May 4, ramping up to 6,000 cfs by May 16. Releases will continue at 6,000 cfs through May 25, ramp down to 2,000 cfs by June 18, and reach the summer base level of 450 cfs by July 22. [See website: www.usbr.gov/mp/cvo]

Tom Schlosser, attorney for the Hoopa Valley Tribe, told TWR that he is hopeful that the 9th Circuit Court's ultimate holding in the case will grant the higher flow level. His optimism was based on the fact that the three judges who ruled on the Motion for Stay are the same judges who earlier heard oral argument on the merits of the case. Schlosser said that the flows granted for this year provide the greatest water releases for fisheries purposes in 40 years for the Trinity River.

**For info:** Tom Schlosser (Morisset Schlosser, et al) 206/ 386-5200; Jeffrey McCracken, BuRec, 916/ 978-5100; Doug Schleusner, Trinity River Restoration Program, 530/ 623-1800

## WATER BRIEFS

## USFWS TO CONDUCT BULL TROUT REVIEW

ID, MT, OR, WA

## GROUPS CRITICIZE CENSORED ANALYSIS

The US Fish and Wildlife Service (USFWS) released a draft analysis (April 5, 2004) of the potential economic impacts of a proposal to designate critical habitat for bull trout in the Columbia and Klamath River basin. Bull trout are listed as threatened species under the federal Endangered Species Act (ESA). The draft economic analysis, prepared by Bioeconomics Incorporated of Missoula, Montana, estimates that protecting bull trout and their habitat in the Columbia and Klamath basins could potentially have economic impacts of \$230 to \$300 million over the next 10 years. The critical habitat proposal for the Columbia River Basin includes parts of Oregon, Washington, Idaho and Montana. The proposal for bull trout in the Klamath River Basin includes a small part of the Klamath basin in Oregon. USFWS has proposed to designate 18,471 miles of streams and 532,721 acres of lakes and reservoirs in Oregon, Washington, Idaho and Montana as critical habitat for the Columbia and Klamath basin populations of bull trout.

USFWS also announced in the Federal Register (April 13, 2004) that it is conducting a 5-year review of bull trout. The 5-year review, required for all ESA-listed species, will assess the best available information on how bull trout have fared since being listed for protection in 1999. This will include analyses of population data and threats to the species. "The purpose of the review is to ensure that the species has the appropriate level of protection under the ESA," said Dave Allen, USFWS Regional Director, Pacific Region. "Reviewing the latest information will also lead to better management and improved conservation of the species." USFWS has acknowledged that five-year reviews have been rare, but that the Interior Department agreed to this one at the request of Idaho Governor Dirk Kempthorne and the Idaho Congressional delegation.

The review considers the best scientific and commercial data that have become available since the listing determination, such as species biology; habitat conditions; threat status and trends; and other new information. If USFWS finds that a change in the species' classification is warranted, the agency may separately propose to reclassify or de-list bull trout. If USFWS does propose a change, it would go through a separate rule-making process, including public review and comment (see ESA § 4(a)).

Pending completion of the 5-year review, USFWS is temporarily suspending work on the draft Recovery Plan chapters for the Columbia River (WA, OR, ID and MT), Klamath River (Oregon), and St. Mary-Belly River (Montana) distinct population segments of bull trout, which were released in November 2002. USFWS will continue to finalize the draft Recovery Plan chapters for the Jarbidge (Nevada) and Coastal-Puget Sound (Washington) population segments and release them for public comment this spring to ensure that all the population segments have draft Recovery Plan chapters provided for public review. After the public comment period has closed for these latter two chapters, further work on them will also be suspended pending completion of the 5-year review.

In January 2002, USFWS and the Alliance for the Wild Rockies (AWR) and Friends of the Wild Swan (the Friends) reached a court settlement establishing a schedule for the proposal of critical habitat for bull trout. The two environmental groups sued the USFWS for not designating critical habitat after listing bull trout in 1999 as threatened.

Bull trout critical habitat work is continuing on a revised schedule. USFWS' agreement with the AWR and the Friends calls for a final designation of critical habitat for the Columbia and Klamath River population segments to be completed by September 2004. Proposed critical habitat for the Jarbidge, St. Mary-Belly, and Coastal-Puget Sound population segments will be released for public comment in late June or early July 2004. Final critical habitat for these population segments will be designated in June 2005.

USFWS is asking anyone with new scientific or commercial information concerning the status of the bull trout to submit it to John Young, Bull Trout Coordinator, Attn: 5-year Review, US Fish and Wildlife Service, Ecological Services, 911 NE 11th Avenue, Portland, Oregon 97232, Fax: 503/ 231-6243, or email: [R1BullTrout5Y@r1.fws.gov](mailto:R1BullTrout5Y@r1.fws.gov).

Meanwhile, AWR and the Friends of the Friends have criticized USFWS for censoring the economic analysis prepared by Bioeconomics. AWR and the Friends have demanded that USFWS release the complete cost-benefit analysis for designating critical habitat for bull trout in a letter to the agency.

"The Fish and Wildlife Service misled the American public when they released their censored version of this economic analysis last week," said Michael Garrity, Executive Director of AWR. The cost-benefit analysis the government released did not include 59 pages of benefits in the original cost-benefit analysis. "Federal Agencies are required by law to provide an assessment of cost and benefits of proposed regulatory actions. The law does not allow the government to ignore the benefits if they don't get the result they want. A cost-benefit analysis means what it says, you have to look at both the costs and the benefits," Garrity charged. USFWS' draft Economic Analysis is posted at: <http://pacific.fws.gov/bulltrout/>.

According to Garrity, a part of the benefit analysis not released by USFWS found that protection for the bull trout would benefit irrigators since work to restore the fishery would result in more water later in the year. This effect would occur due to a reduction in logging and better watershed protection measures designed to protect the bull trout. Garrity also pointed out that there would be enormous benefits to municipal watersheds. "For example, 80% of Oregon's drinking water comes from watersheds that are located in US Forest Service lands. Protection for bull trout would allow tremendous savings for municipalities that won't need to implement water treatment measures."

**For info:** Joan Jewett, USFWS, 503/ 231-6121, website: <http://news.fws.gov/newsreleases/default.cfm?region=1>; Michael Garrity, AWR, 406/ 459-5936, website: [www.wildrockiesalliance.org/](http://www.wildrockiesalliance.org/)

## BPA COLUMBIA BASIN SPILLS

OR, WA

## “AMENDED PROPOSAL” / TRIBES THREATEN SUIT

The Confederated Tribes of the Umatilla say they intend to sue the federal government to stop the Bonneville Power Administration (BPA) and the US Army Corps of Engineers (Corps) from following through with their March 30th proposal to reduce the amount of water BPA spills over four Columbia Basin hydroelectric dams (Ice Harbor, John Day, The Dalles, and Bonneville Dams). The BPA and the Corps proposed a three year pilot program to curtail spills in July and eliminate spill in August in order to allow more water to pass through the turbines (creating additional energy and BPA revenue). The Tribes, however, strongly believe that the summer spills are necessary for recovering chinook salmon. The spills allow water to flow over dam spillways, aiding downstream migration. [See TWR #2 Briefs: “More Power/Fewer Spills”]

Jay Minthorn, chair of the Umatillas’ Fish and Wildlife Committee and vice-chairman of the Columbia River Inter-Tribal Fish Commission, was quoted as saying “Bonneville has misled the public with their message that summer spill would save \$77 million and kill only 24 fish. Both those numbers are wrong. The fact is that this action will cause the deaths of tens of thousands of fish across the region and set back salmon recovery.” Tribal biologists have estimated that reduction of the summer spill would kill as many as 50,000 adult salmon each year. Antone Minthorn, Chairman of the Umatillas’ Board of Trustees, commented that BPA’s plans to reduce or eliminate spill at four Corps’ dams this summer has created a situation where the Tribes have no choice but to file a lawsuit. “Our policy has always been to negotiate rather than litigate but this time our hand has been forced,” he said. “Hopefully, their delay in deciding to end spill means they are re-examining the political and legal implications of their proposal because we think they will lose in court.”

For a comprehensive source of comments and information, visit the website of the Columbia Basin Fish and Wildlife Authority ([www.cbfga.org](http://www.cbfga.org)), “Hot topic: Proposed Curtailment” link. For detailed “Comments on Proposed Reductions to Summer Spill Regime” by Bob Heinith, a representative of the Columbia River Inter-Tribal Fish Commission, go to their website: [www.critfc.org/legal/spill.html](http://www.critfc.org/legal/spill.html).

BPA and the Corps released a press report on April 21st which stated that they will take more time to make a decision on summer spill at Columbia and Snake River dams. “We remain committed to developing a summer spill reduction proposal and a package of measures that will offset the impacts to fish,” said Brigadier General William Grisoli, commander of the Northwestern Division, US Army Corps of Engineers. With strong support from NOAA Fisheries, substantial progress has been made in refining the analysis of biological impacts associated with a reduction in summer spill, according to BPA. The agencies continue to work with regional parties to explore mitigation actions, or “offsets,” to provide equal or better protection for salmon and steelhead that currently benefit from the costly summer spill program. BPA, the Corps and other federal agencies will convene with the states and tribes at a later date, to be determined, as the amended proposal comes together. According to BPA, the proposal would impact the migration of ESA-listed Snake River fall chinook salmon by 2-20 adult fish (and 500 smolts); non-listed Hanford Reach fall chinook by 885-7080 adult fish (and 177,000 smolts) and for other non-listed fall chinook by 690-5520 adult fish (and 138,000 smolts).

BPA’s proposal document is available at: [www.salmonrecovery.gov/docs/summer\\_spill/Summer\\_Spill\\_Proposal3\\_30\\_04.pdf](http://www.salmonrecovery.gov/docs/summer_spill/Summer_Spill_Proposal3_30_04.pdf)

Rick George, the lead fish and wildlife staff person for the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), told TWR that CTUIR’s objective was to stop federal action that would compromise the recovery of salmon in the Columbia Basin. “This is the wrong time for a power marketing agency to end the backbone of mainstem passage on the Columbia River,” George stated. “We vehemently disagree with the federal proposal and especially with BPA’s public relations stance. BPA’s ‘spin’ that they can save \$77 million and only harm a few fish is particularly troubling. In the Umatilla Basin alone tens of thousands of fish would be harmed and dozens of other basins will be impacted that are not even discussed.” George noted the irony of BPA spending \$50 million in the late 1980’s and early 1990’s to help a successful re-introduction of three extirpated species in the Umatilla Basin (with an annual return now of some 30,000 salmon each year) only to turn around and eliminate a recovery action that is finally showing positive results. George went on to say that CTUIR is contemplating its legal possibilities under the Endangered Species Act, treaty rights-based federal trust responsibilities and other legal avenues to stop the proposal from being implemented.

The “Amended Summer Spill Reduction Proposal” is expected to be released Wednesday May 5th (near press time for TWR). The release will include the spill proposal plus a complete list of offsets that will fully mitigate for the reductions, according to Mike Hansen of BPA.

**For info:**

Rick George, Confederated Tribes of the Umatilla Indian Reservation, 541/ 276-3449, email: [rickgeorge@ctuir.com](mailto:rickgeorge@ctuir.com), website: <http://www.umatilla.nsn.us>

Mike Hansen, BPA, 503/ 230-4328, Suzanne Cooper, BPA, 503/ 230-5077, website: [www.efw.bpa.gov/cgi-bin/efw/E/Welcome.cgi](http://www.efw.bpa.gov/cgi-bin/efw/E/Welcome.cgi); additional information from BPA on the summer spill proposal and comments received, see the following website: [www.salmonrecovery.gov/implementation.shtml](http://www.salmonrecovery.gov/implementation.shtml)

Rob Lothrop, CRITFC 503/ 238-0667



**ERRATUM – The Tribal Energy Northwest Conference in Seattle, WA** will be held on **June 17-18**, not June 18-19 as shown in TWR's Calendar for Issue #2.

**May 19-21 D.C.**  
**Wetlands Law and Regulation, American Law Institute-American Bar Association, Washington DC**, Hilton Embassy Row, RE: Federal Wetlands Law, Post-SWANCC Cases, Section 404 Jurisdiction, Developments in Regulatory Takings, Mitigation Science, Policy and Practice, Nonwetland Waters, Litigation and Enforcement Update. For info: 800-253-6397, [www.ali-aba.org/aliaba/emailfrm.htm](http://www.ali-aba.org/aliaba/emailfrm.htm)

**May 20 CA**  
**Trinity River Tour, Redding**, Hosted by the Association of California Water Agencies. For info: John Chandler, 916/ 441-4545

**May 20-21 OR**  
**Oregon Environmental Quality Commission (EQC) Meeting, Hermiston**, Community Center, 415 So Hwy 395, 9am Both Days. RE: Water Quality Standards - Toxic Pollutants Criteria; Umatilla Chem Agent Disposal Start-Up; Pollution Control Tax Credits; Performance Partnership With EPA; More. For info: Mikell O'Mealy, DEQ, Office of the Director, 503/ 229-5301

**May 20-21 OR**  
**Oregon Water Resources Commission Meeting, Salem**, 725 Summer Street NE, Ste. "A", RE: Request to Repeal Rules Under OAR Chapter 690, Divisions 3, 11, and 26, Rules on Certified Water Rights Examiners, Willamette Basin Program Exception, Well Construction Standards, Willamette Basin Groundwater 5-Year Permits, Legislative and Budget Update, Instream Water Use Report, Irrigation Optimization. For info: Dianne Addicott, WRD, 503/ 986-0875, website: [www.wrd.state.or.us](http://www.wrd.state.or.us)

**May 20-21 D.C.**  
**Wetlands Law and Litigation, ALI-ABA, Washington, D.C.**, Hilton Embassy Row, RE: Clean Water Act's Section 404 Regulatory Program, Policy Changes, New Programs, Practical Issues With Permits And Mitigation, Science And Policy Perspectives, Wetlands Restoration, Enforcement Violations & Defenses, 5th Amendment & Commerce Clause Challenges. Ethics Concerns. For info: 800/ 253-6397 or website: [www.ali-aba.org](http://www.ali-aba.org)

**May 21 CO**  
**Colorado Ground Water Commission Meeting, Denver**, 1313 Sherman Street, Rm. 318. For info: Marta Ahrens, 303/ 866-3581, email: [marta.ahrens@state.co.us](mailto:marta.ahrens@state.co.us), website: <http://water.state.co.us/cgwc/>

**May 24-25 CO**  
**Colorado Water Conservation Board Meeting, Steamboat Springs**, Steamboat Grand Hotel and Conference Center, 2300 Mt. Werner Circle, 5/24 start at 3 pm. For info: email: [cwcbnews@state.co.us](mailto:cwcbnews@state.co.us), website: <http://cwcb.state.co.us/>

**June 4-5 WA**  
**Northwest Straits Initiative Conference, Everett**, Everett Events Center. RE: Protecting and Restoring the Marine Environment under the Northwest Straits Initiative. For info: Conf Organizers, 425/ 947-4579 or email [conference@nwstraits.org](mailto:conference@nwstraits.org)

**June 7-10 CA**  
**Science Needs for the Klamath Basin Conference, Humboldt**, Humboldt State University, RE: Anadromous Fish, Instream Flow Needs, Upper and Lower Basin Connections in the Klamath Basin, Hosted by U.S. Departments of the Interior and Commerce and the Klamath River Basin Fisheries Task Force. For info: Walt Duffy, HSU, 707/ 826-3259; Irma Lagomarsino, NOAA Fisheries, 707/ 825-5160

**June 8-10 WA**  
**Northwest Power and Conservation Council Meeting, Clarkston**, For info: NPPC, 800/ 452-5161, email: [info@nwcouncil.org](mailto:info@nwcouncil.org), website: [www.nwppc.org/](http://www.nwppc.org/)

**June 10 OR**  
**Northwest Water Trading and Marketing, The Seminar Group, Portland**, World Trade Center, 121 SW Salmon, 8:30am-4:30pm, RE: Tools for Water Marketing, Transfer Process, Washington's Hot Topics, Case Study: Deschutes Basin, Economics of Trading, Water Trading for the Environment, 3rd Party Impacts. For info: The Seminar Group, 800/ 574,4852, website: [www.TheSeminarGroup.net](http://www.TheSeminarGroup.net)

**June 11 WA**  
**Natural Resources Damage Litigation Conference, Seattle**. For info: Law Seminars International, 800-854-8009 or website: [www.clenews.com/LSI/04/04tribnv.htm](http://www.clenews.com/LSI/04/04tribnv.htm)

**June 13-18 CA**  
**Pacific Fisheries Management Council Meeting, Foster City**, Crowne Plaza Mid-Peninsula, For info: Kerry Aden, 866/ 806-7204; email: [Kerry.Aden@noaa.gov](mailto:Kerry.Aden@noaa.gov), website: [www.pcouncil.org](http://www.pcouncil.org)

**June 14-15 CO**  
**Colorado Water Quality Control Commission Retreat, Salida**, 9am-5pm. For info: Paul Frohardt, 303/ 692-3469

**June 15 TX**  
**100 Years of Rule of Capture: From East to Groundwater Management, Texas Water Development Board, Austin**, Capitol Extension Auditorium, 9am-5pm, RE: 100th Anniversary of Rule of Capture in Texas, Changes Since 1904 Ruling, Future Changes, Perspectives on Rule of Capture, Groundwater Conservation Districts, Groundwater Marketing, Sustainability. For info: Cindy Ridgeway, 512/ 936-2386, email: [cindy.ridgeway@twdb.state.tx.us](mailto:cindy.ridgeway@twdb.state.tx.us)

**June 16-18 CO**  
**Groundwater in the West: 25th Summer Conference, Natural Resources Law Center, Boulder**, Fleming Law Building, University of Colorado School of Law, RE: Science and Law Basics, Groundwater Management Laws, Indian Groundwater Issues, Modeling and Expert Witnesses, Coalbed Methane, Transboundary Issues, Regional Groundwater Panels, Conjunctive Use. For info: Kathryn Mutz, Natural Resources Law Center, 303/ 492-1286 or email: [nrc1@colorado.edu](mailto:nrc1@colorado.edu), Website: [www.colorado.edu/law/centers/nrlc/waterconference/index.htm](http://www.colorado.edu/law/centers/nrlc/waterconference/index.htm)

**June 16-18 CA**  
**Bay-Delta Tour, Water Education Foundation**, RE: Tour Through the Delta and San Francisco Bay Region, Houseboat Ride on Delta Waterways, Harvey O. Banks Pumping Plant, Skinner Fish Collecting Facility, Bay-Delta Model in Sausalito, Los Vaqueros Reservoir and Suisun Marsh. The Tour Begins and Ends at Sacramento International Airport, Dinner at the Alta Mira Hotel in Sausalito. For info: <http://www.water-ed.org/tours.asp>

**June 17-18 WA**  
**Tribal Energy Northwest Conference, Seattle**, Renaissance Seattle Hotel, 515 Madison St. RE: Structuring Energy Resources For Tribal Facilities And Commercial Enterprises, Tribal Energy Development; FERC And The Western Area Power Administration; Transmission, Relicensing, Financing And Access To Technical Assistance And Grant Opportunities; Federal Legislative Proposals. Co-Chairs: Karen Atkinson, Tribal Strategies Inc; Eric Eberhard, Dorsey & Whitney, LLP. For info: Law Seminars International, 800/ 854-8009 or website: [www.lawseminars.com](http://www.lawseminars.com)

(continued from previous page)

**June 21-22 TX**  
**Water Resources Symposium,**  
**Houston,** The Houstonian, RE:  
 Water Resource Development,  
 featuring oil baron T. Boone  
 Pickens; Water Law, Financing,  
 Risk Management. For info:  
 Neal Stelting, 307/ 742 3232,  
 email: neal  
 stelting@hotmail.com

**June 23-26 CO**  
**Environmental Litigation,**  
**American Law Institute-**  
**American Bar Association,**  
**Boulder,** School of Law, RE:  
 Substantive and Trial Skills,  
 Jurisdiction. Standing, Ripeness,  
 Preemption, Litigation Adminis-  
 trative Case, Discovery In  
 Environmental Litigation,  
 Experts, Federal And State  
 Hazardous Substance Litigation,  
 National Resource Damage  
 Litigation, Enforcement Litiga-  
 tion, Citizen Suits And Defenses,  
 NEPA And "Little NEPA,"  
 Ethics In Enviromental Litiga-  
 tion. For info: 800/ 253-6397 or  
 website: www.ali-aba.org

**June 27-July 1 UT**  
**World Water & Environmental**  
**Resources Congress 2004,**  
**Environmental Water &**  
**Resources Institute of the**  
**American Society of Civil**  
**Engineers, Salt Lake City,**  
 Grand America Hotel, RE:  
 Integration of Knowledge and

Scientific, Engineering, and  
 Management Efforts Across  
 Hydrologic Media (Atmospheric,  
 Surface Water, and Ground  
 Water); Among Various  
 Disciplines (Engineering,  
 Hydrology, Policy, Law,  
 Socioeconomic and Ecology);  
 Plus Symposium on Native  
 American/Indigenous Peoples/  
 First Nations' Natural Resources  
 Needs. For info: Leonore Jordan,  
 800/ 548-2723, email:  
 conferences@asce.org

**June 28-30 CA**  
**Riparian Ecosystems and**  
**Buffers Conference, American**  
**Water Resources Association,**  
**Olympic Valley, The Resort at**  
**Squaw Creek, RE: Multi-scale**  
**Structure, Functions, And**  
**Management Of Riparian**  
 Ecosystems, Conservation  
 Buffers, Water Quality, Aquatic  
 Habitat, Terrestrial Habitat, New  
 Buffer Technology, Urban  
 Riparian Areas, 2002 Farm Bill,  
 More. For info: Patricia A. Reid,  
 AWRA, 540/ 687-8390,  
 email:pat@awra.org,  
 website:www.awra.org/meetings/  
 Olympic2004/index.html

**July 1 WA**  
**Regional Hydropower Reli-**  
**censing Seminar, Seattle,**  
 Washington State Convention &  
 Trade Center, RE: Overview of  
 the Federal Power Act: FERC's  
 Perspective, National Legislation  
 & Litigation Update, Federal and  
 State Issues Under Sections 4(e)  
 and 18 of the Federal Power Act,  
 Tribal Issues, ESA and FERC,  
 Program Co-Chairs: James M.  
 Lynch, Stoel Rives LLP, Mason  
 D. Morisset, Morisset Schlosser  
 Jozwiak & McGaw. For info:  
 The Seminar Group, 800/ 574-  
 4852,  
 email:info@TheSeminarGroup.net,  
 website:  
 www.theseminargroup.net/htmls/  
 seminars/04hydwa/index.htm

**July 12-13 CO**  
**Colorado Water Quality**  
**Control Commission Meeting,**  
**Denver,** CDPHE Sabin Room,  
 9am-5pm. For info: Paul  
 Frohardt, 303/ 692-3468

**July 13-15 WA**  
**Northwest Power and Conser-**  
**vation Council Meeting,**  
**Spokane.** For info: NPPC, 800/  
 452-5161,  
 email:info@nwcouncil.org, ,  
 website: www.nwppc.org/

**July 14 - July 16 OR**  
**Western States Water Council,**  
**Summer Meeting, 145th**  
**Council Meeting, Newport,**  
 Hallmark Inns & Resorts, 744  
 SW Elizabeth, 7/14: Field Trip;  
 7/15-7/16 Meeting (Adjourn by  
 Noon 7/16). For info: WSWC,  
 801/ 561.5300, website  
 www.westgov.org/wswc/  
 meetings.html

**July 15-16 CA**  
 Water Law & Policy Briefing,  
 Water Education Foundation, San  
 Diego, Hyatt Islandia Hotel on  
 Mission Bay, RE: Latest  
 Information on Water Law,  
 Management and Planning  
 Across the States, In-Depth Panel  
 Discussions. For info: http://  
 www.water-ed.org/  
 briefings.asp#law&policy

**July 15-16 OR**  
**Oregon Environmental Quality**  
**Commission (EQC) Meeting,**  
**Portland,** DEQ Headquarters,  
 811 SW Sixth Avenue, Conf Rm  
 3A, Time/Agenda TBA. For info:  
 Mikell O' Mealy, DEQ, Office of  
 the Director, 503/ 229-5301

**July 20-21 CO**  
**Colorado Water Conservation**  
**Board Meeting, Delta,** Location/  
 Time/Agenda TBA. For info:  
 email:cwcbnews@state.co.us,  
 website: http://cwcb.state.co.us/



260 N. Polk Street • Eugene, OR 97402

PRSRT STD  
 US POSTAGE  
 PAID  
 EUGENE, OR  
 PERMIT NO. 459