



The Water Report

Water Rights, Water Quality & Water Solutions in the West

In This Issue:

**Drinking Water:
Recovering
Contamination
Treatment Costs 1**

**Ecosystem
Economics 5**

**Western States'
Groundwater Law
Overview 9**

Water Briefs 17

Calendar 23

Erratum:

Author **Craig Lichty**,
("Water Reuse"- TWR #5)
works out of
Kennedy/Jenks'
San Francisco Office

Next Issue:

**Colorado
Groundwater Law**

**Water Rights
& ESA Takings**

**Evaluating
Stormwater BMPs**

& More!

Public Drinking Water Contamination

CHEMICALS & PETROLEUM PRODUCTS

RECOVERING CONTAMINATION TREATMENT COSTS

by Michael Axline and Duane Miller (Miller, Axline & Sawyer)

Domestic water providers in the West, including municipalities, utility districts, and private water suppliers, face a crisis. Water supplies are dwindling while the public's need for safe drinking water is expanding. Water quality monitoring and treatment standards are becoming more strict at the same time that contamination levels in many public water supplies are increasing. Managers responsible for water delivery systems must maintain minimum and maximum pressure levels throughout the system, and shutting down wells due to chemical or petroleum product contamination can have critical impacts on the entire system.

It didn't have to be this way.

Chemical and petroleum manufacturers have known for decades that many of their products pose a high risk of contaminating public water supplies. Our law firm, Miller, Axline & Sawyer, has represented public water suppliers since 1989 in cases seeking to recover from these manufacturers the costs of removing chemicals and petroleum products from drinking water. In case after case we have uncovered internal documents from chemical and petroleum manufacturers discussing quite frankly the potential for their products to end up in the public's water supplies. These documents often reveal that the manufacturers knew of, and discussed internally, the risk of groundwater contamination from their products starting as early as the 1940's and 1950's.

Despite this knowledge, many manufacturers aggressively marketed their chemicals and petroleum products (and made literally billions of dollars in profits), without disclosing the potential for their products to contaminate groundwater. To protect profits and promote sales, these manufacturers did not even advise the users of their products to take basic precautionary steps to prevent groundwater contamination. Worse, the same manufacturers often fought regulatory efforts and withheld from the public and regulatory agencies information showing that their products were causing widespread contamination of groundwater and public drinking water supplies.

Internal industry memoranda often emphasize the need to prevent leaks and discharges at manufacturers' own facilities, where the chemicals are produced and can be easily traced from groundwater to the manufacturing plant. Purchasers and users of these chemical products, however, are seldom given the same precautions — even though such precautions would be relatively easy to describe and implement. Instead, the manufacturers assume that contamination caused by their products in distant locations will not be traced back to them, and they therefore ignore, and even try to affirmatively conceal, the known risk of such contamination. Science and the law, however, have finally caught up with these manufacturers.

Public water supply managers who discover chemical contamination in their water supplies often consider only two options: (1) treat the water to remove the chemicals, and pass the treatment costs along to the ratepayers; or (2) close the well and look for additional sources of water.

Treatment Cost Recovery

There is, however, a third option.

Public water supply managers facing contamination of their water systems with chemical and petroleum products may have legal remedies to recover the costs of treatment from the parties who manufactured the chemicals and who profited from their sale. Cases involving damages to public water are significantly more complicated than automobile accident cases, but the principle is the same. One party, through negligence, recklessness, or intentional misconduct, has injured another party. If a jury determines that the party causing the injury did not follow reasonable standards of conduct, the jury can direct the offending party to pay for the injury.

Treatment systems to repair contaminated public water systems cost more than automobile repairs. Treatment costs can run into the hundreds of millions of dollars. Over the past several decades, however, Miller, Axline & Sawyer has recovered the costs of such treatment on behalf of numerous cities, water districts, and private water suppliers.

1st MTBE Case

In *South Tahoe Public Utility District v. Arco*, No. 999128 (Calif. Superior Ct., County of San Francisco 2001), for example, we represented the South Tahoe Public Utility District in a suit to recover the costs of treating methyl tertiary butyl ether (MTBE) that had contaminated the South Tahoe Public Utility District's water supply. The petroleum industry fought ferociously to defend this case, because it was the first case in the nation to go to trial over MTBE contamination of groundwater. The industry hired an army of lawyers and spent tens of millions of dollars trying to prevent the case from being presented to a jury.

Evidence

After ten months of trial, the jury in the case returned a verdict against the petroleum industry defendants. We presented evidence in that trial that the petroleum industry was well aware, as early as 1980, that: (1) over half of the gasoline storage tanks in the United States leak; (2) when MTBE leaks from gasoline storage tanks into groundwater, it travels faster and further than any other constituent in gasoline; and (3) incredibly small amounts of MTBE in water cause taste and odor problems that make the water non-potable.

Long-Standing Knowledge

We also presented evidence that despite its long-standing knowledge of the threats MTBE posed to groundwater, and the high costs of treating groundwater contaminated by MTBE, the petroleum industry aggressively marketed MTBE without disclosing its propensity to cause devastating impacts to water supplies. Long before the Clean Air Act required "oxygenates" in gasoline, the industry was selling MTBE in gasoline, because the industry made enormous profits by supplementing expensive-to-refine gasoline with cheaper MTBE, then selling the end product as "improved" gasoline. Finally, we presented evidence that at least some members of the petroleum industry deliberately withheld from regulators important information on the threat that MTBE posed to the nation's drinking water supply. The jury found that gasoline containing MTBE was a defective product and that two defendants acted with "malice"—thus exposing them to punitive damages. After the jury's verdict, the defendants who remained in the case agreed to settle. The total settlement was approximately \$69 million.

Study Suppressed

From a water provider's perspective, one key issue is the amount of MTBE which adds a perceptible taste or odor to drinking water. Every publicly available study reported the taste and odor problems at the lowest levels tested. Based on those studies, it was generally thought that 15 parts per billion (ppb) was the lowest perceptible level and some states adopted regulatory standards at that level. It turns out that there was a study commissioned by the European Fuels Oxygenated Association, an industry group, to determine the lowest perceptible level. This study, known as the "Campden Study" found that a concentration as low as 0.04-0.06 created perceptible odors for 20% of the study population. Witnesses in the *South Tahoe* case admitted that this report was never disclosed to the public or any government agencies, or for that matter to most industry employees. Some jurors in the *South Tahoe* case who were later interviewed said that the withholding of that study was a major factor in their finding of "malice" against one defendant.

2nd MTBE Case

We subsequently settled a second MTBE contamination case on behalf of the City of Santa Monica that the trial court valued as exceeding \$350 million, including all costs of treating the contaminated aquifer from which Santa Monica draws much of its drinking water. *City of Santa Monica v. Shell Oil Co.*, No. 01CC04331 (Calif. Superior Ct., County of Orange, 2004).

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.

Treatment Cost Recovery

State Bans

Lapsed Federal Proposal

DBCP

PCE

Unique Cases

Evidence Gathering Techniques

New Technology

Other public water suppliers around the country who face serious MTBE contamination problems are now seeking to recover the costs of treatment. Most of these cases have been consolidated in federal court for the Southern District of New York. See *In Re: Methyl Tertiary Butyl Ether ("MTBE") Products Liability Litigation*, MDL 1358, Master File C.A. No. 1:00-1898 (SAS) (S.D.N.Y. 2004). Miller, Axline & Sawyer is a part of the steering committee for these cases. Over 150 public and private water suppliers from 16 states are plaintiffs in the case (61 cases consolidated).

Eighteen states have now banned MTBE. President Clinton's administration proposed a federal ban on MTBE, but the ban was not finalized. The Bush Administration let the proposed ban lapse, claiming that the states were adequately handling the situation. Not all states with MTBE problems are aware of the scope of the problem, however. States where oxygenated gasoline was required under the Clean Air Act knew that MTBE was in wide use, but states without oxygenate requirements under the Clean Air Act were not as aware that MTBE was being sold in their jurisdictions for market reasons, as opposed to regulatory requirements.

Although MTBE has received a lot of public attention (and was even the subject of an attempt by the petroleum industry to amend last year's federal Energy Bill to exempt the industry from liability), it is not the only contaminant of concern to public water suppliers. We have represented water suppliers in suits involving other remarkably persistent and extremely toxic chemicals such as DBCP (see e.g., *City of Riverside v. Shell Oil Co.*, No.307425 (Calif. Superior Ct., County of San Francisco (2001))). In all the plants where it was manufactured, DBCP (1,2-dibromo-3-chloropropane) caused infertility and sterility problems for workers, and it is of further concern because it is considered to be genetically active. Workers were given standard physicals and the company represented that there was no problem indicated. It was later discovered, however, that the companies' internal documents showed they were deeply concerned about reproductive impacts, yet failed to include any testing or questions regarding such impacts in the physicals given to workers. In California alone, it is estimated that DBCP has contaminated 7,000 square miles of groundwater.

We are also currently preparing for trial in a case involving extensive pollution of a public water supply system with perchloroethylene (PCE), a chemical widely used in the dry cleaning industry until the public and regulatory agencies discovered its propensity to contaminate groundwater. The manufacturers of PCE knew about, and internally discussed, the problem long before it became public knowledge.

Each of these cases is unique, and the cases often involve different chemicals or petroleum products, but the cases also often involve similar evidentiary and legal issues. How do you prove, for example, several decades after-the-fact, that a particular chemical manufacturer (or group of manufacturers) is responsible for the chemicals that are turning up in a particular well? Although DBCP was banned in California in 1977, for example, tens of millions of gallons of drinking water must still be filtered on a daily basis to remove DBCP. How do you discover (and prove) what the manufacturers knew, and when they knew it? How do you even identify the correct company to name in a lawsuit, when companies change identities and legal status so often? The hydrogeologic, historical, and corporate forensics involved in these cases are exceptionally complex and technical.

Some techniques which have proved to be successful in identifying all appropriate manufacturers of a defective chemical product over a large geographical area include: (1) identifying all local distributors of agricultural chemical products through interviews, phone records, County Agricultural Commissioner's offices, historical trade magazines, newspaper advertisements and, of course, discovery; (2) reviewing Sanborn insurance maps and commercially available agricultural land maps identifying parcel ownership over the relevant time horizon; (3) assembling a computerized data base to collate information from distributors, salesmen, farmers, applicators, and foremen concerning the date and location of individual applications; and (4) identifying all formulators who may have re-packaged or re-labeled products, then determining the identities of their suppliers.

New technology also helps. Previously unavailable techniques such as chemical fingerprinting, three dimensional plume modeling, and even internet "Google" searches can help to compile a compelling story about how the offending chemical got from a manufacturers' plant to a city's water supply. Finally, experts are a critical part of the tracing process. It takes a highly trained eye and years of experience to sift through the mountains of data developed in the early stages of these investigations, separate the wheat from the chaff, and identify the additional investigatory work that will lock-in the case. Everything from digging up septic tanks to testing hair and teeth of people exposed may be required, depending on the contaminant involved.

You also often need a scorecard to tell the players. There are always a lot of parties involved in manufacturing, distributing, and using a particular chemical or petroleum product. The positions of the players can shift radically over time, as the end product users begin to realize that, although they were the

Treatment Cost Recovery

Attributing Responsibility

Legal Principles

Nuisance Holdings

Product Liability

Contaminant Trail

Statute of Limitations

ones who ultimately used the product that ended up in a public water supply, the manufacturers of the product did not tell them the whole story about the risks of using the product (or even affirmatively directed that the product be used in such a way that it would inevitably contaminate groundwater). The local dry cleaners and gas stations that are the immediate cause of groundwater contamination seldom have the funds necessary to pay for clean-up or treatment, and frequently will join the public water supplier in seeking to recover costs from the manufacturers and distributors of the relevant chemical or petroleum product.

As policy, it makes sense to require that those who were most responsible for creating a problem — and who profited the most from creating a problem — to contribute the most to cleaning up the problem. Juries, when presented with a complete picture, tend to find that manufacturers bear the largest share of the responsibility, and should shoulder the largest share of the cost.

These cases involve the same legal principles for recovery that you would allege if your neighbor dumped or leaked toxic substances onto your property, including: negligence; nuisance; and trespass. The person doing the dumping may not be the only party who bears responsibility for the resulting damage, however. In June of this year the California Court of Appeals held, in our case involving PCE contamination, that chemical manufacturers can be liable for nuisance if they instruct users to improperly dispose of their chemical products. In *City of Modesto Redevelopment Agency v. Superior Court* (2004) 119 Cal.App.4th 28, the court held: “liability for nuisance does not hinge on whether the defendant owns, possesses or controls the property, nor on whether he is in a position to abate the nuisance; the critical question is whether the defendant created or assisted in the creation of the nuisance.” 119 Cal.App.4th at 35. The court cited *Mangini v. Aerojet General Corp.*, 230 Cal.App.3d 1125, 1137 (1991) and *Newhall Land & Farming Co. v. Superior Court*, 19 Cal.App.4th 334, 343 (1993) in support of this conclusion. The *Modesto* opinion, which contains a detailed discussion of statutory construction and nuisance law, can be accessed via the internet at: fsnews.findlaw.com/cases/ca/caapp4th/slip/2004/a104367.html

To insure that the manufacturers of the chemicals or petroleum products are held to account for their actions, we also allege product liability theories when representing public water suppliers. If an innocent bystander is injured by a car that goes out of control due to a defectively manufactured steering mechanism, the manufacturer of the car would be liable to the bystander under product liability theory, even though the bystander did not purchase the car from the manufacturer. The same applies when innocent bystander public water suppliers are injured by chemicals or petroleum products that have gone out of control and ended up in public water supplies. Chemical manufacturers who are aware that their products are likely to contaminate public water supplies, and market the product without warning of such risks or taking steps to reduce such risks, should be responsible for the costs when those risks become a reality.

Managers of water supply systems have an enormous responsibility to provide safe, clean drinking water to families and businesses in their areas of service. Whether the population served is one thousand or one million, managers must constantly worry about both quantity and quality of water. Chemical or petroleum product contamination of even a single a drinking water well imposes significant treatment costs on water supply systems. Managers who take the time to follow the trail of those contaminants back to their source, examine how they got into the supply system and who profited from them, often conclude that it is much more fair and appropriate to make the chemical manufacturers, rather than the public, pay for the costs of treating such contamination.

Managers must also be aware that defendants routinely raise “statute of limitations” defenses in these contamination cases, and argue that so much time has gone by that the manufacturers should no longer be liable. To counter these arguments, water managers should begin considering legal options as soon as any chemical which may require treatment is detected in a public water supply system.

For Additional Information, Contact:

MICHAEL AXLINE or DUANE MILLER (Miller, Axline & Sawyer), 916/ 927-8600
or email: toxictorts@toxictorts.org

Michael Axline served on the faculty of the University of Oregon School of Law as professor of law from 1982 until joining the firm of Miller, Axline & Sawyer in 2004. He was the founder of the Western Environmental Law Center and co-founder of the Environmental Law Alliance Worldwide. He is a member and former Executive Committee member of the International Network for Environmental Compliance. He is the author of numerous books and articles on environmental law.

Duane Miller won the “California Lawyer Environmental Attorney of the Year Award” in 2002 for winning the nation’s first MTBE groundwater contamination case. Other firms around the country now use the evidence and model developed in that case. He served as a member of the State of California’s Superfund Reform Workgroup and is currently a member of Consumer Advocates of California and the American Waterworks Association.

Valuation**Ongoing Problems****Impacts****Diminished Natural Capital****Species****Climate Change****Decision Making****Cost-Benefit Analysis****ECOSYSTEM ECONOMICS**

ECOSYSTEM SERVICES VALUATION TO INFORM WATER AND NATURAL RESOURCE MANAGEMENT DECISIONS

by Daniel D. Heagerty and Gillian C. Ockner (David Evans and Associates, Inc.)

Water (as well as other natural resources) continues to face complex management issues which at times may appear insurmountable. Arguably, many of the problems stem from our long history of trying to simplify very complex ecosystems to meet short term or relatively narrow needs or wants. The water supply and water quality issues facing the western states are the result of unsustainable use of natural resources that has dramatically changed the level of ecosystem service available in the region. Most, perhaps all, of the western states have over-appropriated their rivers and streams—dramatically changing the hydrology, hydraulics, and biological “capital” in those water bodies. Every western state faces substantial water quality issues, with thousands of river miles in every state now determined to be “water quality limited” in one form or another. This is evidence that the natural system’s ability to maintain balance is impacted by our system alterations, overuse, waste, and pollution.

We are informed of degrading environmental conditions daily. The Colorado, Columbia, Klamath, Rio Grande, San Joaquin, and Willamette Rivers are typical of most of the western rivers embroiled in water crises. It is apparent that we have been liquidating our natural capital to support our economy and lifestyles. Now we are paying for the consequences.

In other areas, the American Lung Association reports that air pollution for electricity production costs the nation \$20 billion per year in health care impacts (Renewable Northwest Project, *Switch to Renewable Energy*, 2003). The loss of 20 percent of trees in US cities in the past 10 years contributes to environmental and health problems that have cost an estimated \$234 billion as reported by American Forests (*Reuters*, September 18, 2003). An estimated 75 percent of global fish stocks are now fished at or beyond their sustainable limit (*U.S. Water News*, April 2003).

This trajectory of diminishing natural capital is increasing the value of ecosystem services. Just like traditional economic markets, as goods grow scarce (water, productive soils, etc.), they become more costly to replace, and therefore more valuable to society.

Currently, we are experiencing a high rate of species loss. A conservative estimate of the loss rate is one species per hour or 10,000 times the rate of evolution of new species (Daily, et al., *Issues in Ecology*, February 2001). The cost of species protection continues to rise. The federal government spends millions of dollars every year on species protection and yet ineffective implementation of the Endangered Species Act (ESA) has contributed to the extinction of at least 114 species since the law was passed in 1973, according to a recent study by the Center for Biological Diversity. In order for the agencies to address the backlog of designating critical habitat for listed species, a step in proper implementation, they would need approximately \$153 million, but this year’s federal budget has only \$17 million for the ESA program (*Environmental News Service*, www.keepmedia.com, April 22, 2004).

Climate change is projected to affect water supplies throughout the West, shifting the hydrographs to less winter storage and lower summer flows. These conditions will affect society not only through further constraining already over-appropriated supplies, but also human health by affecting the quality of water, decreasing air quality (drier conditions), changing flood regimes, and increasing the risk of infectious diseases. Coastal resources and economies will be faced with projected increases in sea level rise. (Physicians for Social Responsibility, *Degrees of Danger: Health Effects of Climate Change and Energy in Oregon*, February 2002). Costs associated with climate change have yet to be fully realized.

Valuing Ecosystem Services

The above mentioned examples emphasize the importance of answering this question: how do we account for the value of ecosystem services in our policy and project decision-making to help conserve the resources we have left and most effectively prioritize restoration?

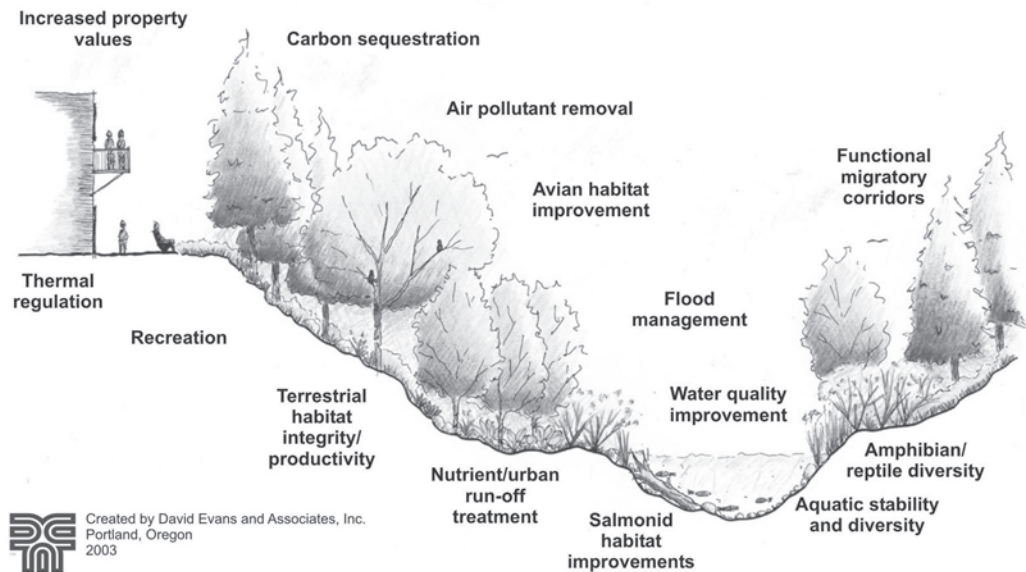
Capturing the value of ecosystem services and applying it to cost-benefit analyses and policy debates is challenging. “Faced with local situations, informed decision-makers need to know where and by how much ecosystem services are degraded by the specific impacts of development, other land uses, or pollution. This problem, the assessment and valuation of services at the margin, is at once the most important and most difficult challenge for economists and ecologists.” (Salzman, *Conservation Biology*, Pages 497-498, Vol. 12, No. 3, June 1998.) If we are to reshape the current trajectory, understanding and valuing ecosystem services in our decision-making is imperative.

Ecosystems provide society with a range of natural conditions and functions collectively known as ecosystem services (Daily 1997, Brown 2001, Roodman 1998 (see below)). Ecosystem services represent the conditions or processes that sustain life. Based on what we know today, we can account for more

Valuation

Ecosystem Services

than 18 natural services in western watersheds. The cross section of a portion of a typical watershed ecosystem provided below is a snapshot of some of the services that benefit society and which can be valued in economic terms. Some of the services provided by watershed ecosystems include: precipitation interception and storage; water purification; biodiversity maintenance; air purification; thermal regulation; erosion control; soil creation; and nutrient cycling.



Direct Use -v- External Costs

These conditions or processes produce benefits that have economic utility or satisfy an economic want. We have traditionally valued ecosystems based on the direct use of natural resources. In the case of direct use, translation of benefits into goods is explicit (trees into lumber, water into crops, etc.) and the connection is accounted for by society (at least in part) through market trading. However, the economic value of natural conditions or processes such as water purification, air purification, nutrient cycling, soil stabilization and plant pollination, is often unclear because of the way we currently measure costs and benefits. The market value of water in the Central Valley of California, or the Colorado River Basin, does not reflect the true costs of putting that water on desert lands for alfalfa crops. Consider the “external costs” of that water when we factor in the costs to society of reduced river flows, which include: affected fisheries; boating impacts; ESA listings; Clean Water Act constraints on cities and industries; aesthetics; property devaluation; desertification (from groundwater level drops); thermal alterations effecting energy consumption; power and infrastructure costs to move the water around; and etc. Ecosystem economics analysis is a method to “map” and then value these connections—this web of systems dynamics—that can bring better accounting for the many goods that are not traded directly in our traditional “markets.”

Modeling

Ecosystem economics requires modeling of the dynamics of the system being evaluated. For a basin plan it would include the “mapping” of all the services and functions performing in that watershed. Where possible, quantities are generated and then value placed on those quantities. Annual yield of water flows can be modeled, the value of the water determined either linearly (Municipal & Industry (M&I), irrigation, etc) or systems based (flow for aquatic habitats/river morphology, fish production, riparian resources, groundwater recharge/discharge, hypolimnion (lake/reservoir) cooling, recreation, aesthetics, property values, hydropower, M&I, irrigation, etc). Economic methods used to identify actual monetary worth of ecosystem services include: assessment of avoided cost or replacement value; assessment of the amount people are willing to pay for a service; analysis of property values and travel expenditures associated with proximity; and use of natural areas. As markets for ecosystem services emerge—such as: carbon offset credit markets; air pollutant cap and trade systems; wetland banks; and watershed effluent trading programs—value can also be determined by the unit price for these services. Though we can not quantify all these goods/services, nor economically “value” all of them, we can track enough of them to find compelling reasons to rethink our approaches to complex water issues.

Water Quality Example

One of the best examples in the US of ecosystem valuation is the New York City water supply in the Catskills, where the city invested \$1.5 billion to buy out pollution sources and restore the watershed to utilize the (natural) ecosystem services, rather than spend an estimated \$8 billion on treatment plants. In addition, the annual Operation and Management (O&M) cost for the engineered solution is \$240 million versus \$10 to \$20 million for the ecosystem approach.

Valuation

Wetlands & Flooding

Flooding & Stormwater Control

Restoration Benefits Quantified

EPA Committee

ECOSYSTEM VALUATION

EPA's Science Advisory Board now has a "Committee on Valuing the Protection of Ecological Systems and Services" which is made up of eight economists, eight ecologists and ten others including specialists in decision science, ethics, and engineering. The Committee is tasked with providing technical advice on the EPA's assessment methodologies for quantifying and valuing services and goods provided by functioning ecosystems. **For info:** EPA website www.epa.gov/sab/panels/vpesspanel.html

OTHER US EXAMPLES INCLUDE:

- IN MASSACHUSETTS, 8,500 acres of wetlands were purchased for floodplain management purposes. The \$10 million purchase proved far cheaper and more beneficial than building dams and levees to achieve the same results—though the “built” alternative was estimated at a cost of \$100 million. The wetlands provide “natural services” at 1/10 the cost of the built solution. The long term O&M costs will also be a fraction of the “built” alternative. An important consideration is that the wetlands will provide several additional “services” to society that the build alternative would not. Such services include: terrestrial and aquatic habitats; water quality treatment; water supply/groundwater recharge; geochemical processes; and sediment and erosion control.
- IN VIRGINIA, a water utility saved an estimated \$57 million in stormwater control and maintenance costs by choosing to maintain forest and riparian buffer areas for stormwater management—instead of “building” flood control infrastructure. The forest and riparian areas have a value of \$57 million that does not appear on real estate or tax appraisals of these properties. Yet, if developed, these natural services would be degraded or terminated. The consequent “downstream costs” may include: Total Maximum Daily Load (TMDL) limitations for industry and public facilities (for temperature, nutrients, metals, etc); sediment removal; flood detention/retention basins; summer ambient temperature increases (requiring additional energy consumption for cooling); further species listing; dry season flow reductions; habitat losses; and more. The costs could be ongoing for years—some having dramatic consequences to local economies (costs of listed species and TMDLs, O&M of stormwater infrastructure). These costs are ultimately born by the utility rate-payer and by the city, county, state and federal taxpayers.

In a recent study for the City of Portland, Oregon, David Evans and Associates, Inc. teamed with ECONorthwest (an economics firm based in Eugene, Oregon) to estimate the potential return on investment of a wetland/floodplain restoration approach to a frequently-flooded area of an urban watershed.

DESIGNATED ECOSYSTEM SERVICES CATEGORIES IN PORTLAND INCLUDED:

FLOOD ABATEMENT – vegetation and soils provide precipitation interception and storage, which abate flooding and avoid flood damage costs. Flood damage costs associated with nuisance flooding (five-, seven-, and ten-year storm events) were based on survey data collected for damages incurred as a result of past flooding of residences, businesses, and utilities, along with road closure costs associated with motorist delays and City costs for emergency services. (Total value of this service provided by the project over 100 years in 2002 dollars is \$14.7 million.)

BIODIVERSITY MAINTENANCE AND RESTORATION – improvement of avian habitat and salmonid habitat was quantified as an indicator for biodiversity maintenance and restoration created by the project. Value for salmonid habitat improvement was calculated based on the project's modeled contribution to a fully restored run and the Johnson Creek residents' estimated willingness to pay for restored salmon runs. Value for avian habitat improvement was calculated based on US Fish and Wildlife Service Habitat Suitability Index models and a nationwide study that estimated the avian habitat value on a per-acre basis. (Total value of this service provided by the project in 2002 dollars is \$5.7 million.)

AIR QUALITY IMPROVEMENT – specifically the removal of ozone, sulfur dioxide, carbon monoxide, and particulate matter were valued based on the estimated pollutant removal rates of reforested areas in the Pacific Northwest, and the associated avoided health care costs of treating ailments associated with air pollution. (Total value of this service provided by the project over 100 years in 2002 dollars is \$2.5 million.)

WATER QUALITY IMPROVEMENT – the estimated value of water quality improvement attributable to water filtration services provided by restored floodplain wetlands was based on a nationwide survey of avoided filtration costs provided by wetlands. Because of the lack of adequate local data, the analysis relied on an estimate of generalized water quality benefits instead of specific water pollutant removal estimates. (Total value of this service provided by the project over 100 years in 2002 dollars is \$2.4 million)

CULTURAL SERVICES – these services include the creation of recreational opportunities (trails, wildlife viewing, etc.) and the increase of property values in close proximity to the restored natural area (i.e., “amenity value”). The recreational value of the park to be created as part of the project was estimated based on the estimated number of annual park users and the unit day value of a visit. The US Army Corps of Engineers has also used this method locally. The amenity value of the project is based on the results of a “hedonic analysis” which had documented the impact Portland parks and open spaces have on the real estate value of proximate properties. (Total value of these services provided by the project over 100 years in 2002 dollars is \$5.9 million)

Valuation

Sustantial Advantages

Stormwater Opportunity

Omitted Values

Dan Heagerty and **Gillian Ockner** will be presenting "The Value of Ecosystem Services in Portland, Oregon" at the "Allocating Water: Economics & the Environment" Conference being held **July 20-22** in Portland. This national conference has scheduled over 30 sessions involving panels of the nation's leading water management experts. The Agenda is well worth checking out. (see Calendar Entry)

To estimate accrued ecological benefits over a period of time as described above, the project team created a system dynamics model for the analysis with software (STELLA) that has been used for mapping systems in the business and medical sectors for many years. The team was able to measure the differences in ecosystem function between existing conditions and the various future scenarios. Estimates for the value of improved function were generated based on economic assessments of the monetary worth of ecosystem services.

Overall, completed analysis indicated that a wetland/floodplain restoration approach on 140 acres could generate benefits for Portland of more than \$30 million (in 2002 dollars) over a 100-year period. The traditional floodplain engineering remedy would have addressed only flood damages, yet required far greater capital and on-going O&M. The public benefits of restoring the ecosystem services were substantial. The choice was to restore the native capital and live off the numerous "interest payments" for the next hundred years (and beyond.) This evaluation indicates that restoration at a larger scale could demonstrate dramatic benefits to society.

Stormwater management for the City of Portland presents the opportunity to apply ecosystem economics and evaluate larger scale benefits of ecosystem restoration. Rainwater, normally viewed as an asset, is a management cost for the City of Portland — a cost growing six times faster than the rate-payer base. Given anticipated population growth, Portland predicts a 60 percent increase in impervious surface within the City's combined sewer system by 2030. Portland is presently investing more than \$1 billion to increase the capacity of its existing storm sewer system but the increased capacity will only handle a 15 percent increase in impervious area. If the city can take an ecosystem services approach and "price" the true value (or costs) of the stormwater, it can restructure the rate base to reflect actual values. Thus a system of market-based tradable credits could be established to achieve reductions in effective impervious area, which would also restore natural services such as groundwater recharge, floodplain function and wetland habitats. ESA and CWA compliance conditions could result as well, thus restoring key watershed functions and eliminating additional capital-intensive and ecosystem destructive linear solutions.

Conclusion

The benefit-cost analyses undertaken for most projects use traditional economic evaluations, omitting the values provided by watershed ecosystem services. The result is a relatively narrow conclusion that the dam or diversion will benefit a number of acres which will produce crops, employ people, bring in supporting commerce, and generate taxes. Complex ecosystems (from small catchment to Basin scale) have had their "systems integrity" reduced (simplified) and they have thus been compromised in what they can deliver. A channelized river no longer can provide diverse fish habitat, proper floodplain function, water quality treatment, or diverse fauna assemblages. The river and its associated life have lost resilience, the ability to adapt and evolve. We continue to read about our western water problems.

But what about those 18 ecosystem services on which we can now perform valuation? Are they forever altered? What are the lost values, lost opportunities to use their outputs, goods, services? Without looking at and accounting for the natural capital, we find ourselves wondering how we ended up with water over-appropriations, annual water quality violations, higher and higher levels of mechanical wastewater treatment, increasing species listings, and ongoing water rights battles.

FOR ADDITIONAL INFORMATION:

DANIEL HEAGERTY, (David Evans and Associates) 503/ 499-0412 or email: ddh@deainc. com;

GILLIAN OCKNER, (David Evans & Associates) 503/ 499-0567 or email: gcf@deainc.com

Daniel Heagerty is a Senior Vice President at David Evans and Associates, Inc. (DEA). He specializes in environmental permit compliance and regulatory affairs, restoration ecology, and long-range resource and ecosystems management planning. **Gillian Ockner** is an environmental scientist and natural resources economist at DEA. She specializes in environmental management using science, policy, and economics to reach innovative solutions to Clean Water Act and Endangered Species Act compliance challenges and long-term protection of ecosystem services.

BOOKS REFERENCED IN THIS ARTICLE INCLUDE:

Daily, Gretchen C., 1997. *Nature's Services: Societal Dependence on Natural Ecosystems* — Island Press, Washington, DC.

Brown, Lester R., 2001. *Eco-Economy: Building an Economy for the Earth* — Earth Policy Institute, New York, NY.

ROODMAN, DAVID MALIN, 1998. *The Natural Wealth of Nations: Harnessing the Market for the Environment* — W.W. Norton & Company, New York, NY.

Groundwater Law

Water Supply

Complex Regulation

Aquifers

"Mining" Groundwater

Increased Withdrawal

Ogallala

Usage



WESTERN UNITED STATES GROUNDWATER LAW



by Gary Bryner, Research Associate, Natural Resources Law Center
and Professor, Public Policy Program, Brigham Young University

As the population of the American West continues to grow, one of the greatest challenges facing many communities is securing an adequate water supply. Cyclical droughts, the threat of reduced snowpack, disruptions from climate variability, and other factors have added to the pressures to find new sources of water. Groundwater has become an increasingly important source for municipal, industrial and agricultural/irrigation water supply, particularly in the West, where in some areas groundwater is the only dependable source of water. While groundwater resources will become increasingly important in the twenty-first century in meeting human and ecosystem needs, aquifers in the West are showing sobering signs of depletion and pollution. The legal and institutional systems for managing and protecting groundwater resources are complex — they are often separate from parallel systems for governing surface waters, even though ground and surface waters may be interconnected. The purpose of this article is to examine the importance of groundwater sources and the challenges facing communities in the West that rely on them, provide a brief overview of the laws devised by different Western states to regulate groundwater, and explore some lessons from these varied efforts to develop and protect this critical natural resource.

The Importance of Western Groundwater

Groundwater is found in water-bearing layers of saturated underground rock and sand, called aquifers, formed as surface water percolates through layers of earth and fills porous rock and sand. Groundwater moves very slowly, depending on the nature of the material in which it has accumulated. Aquifers are recharged naturally through precipitation that filters through a recharge area, but the process is typically very slow, taking from decades to centuries. If the withdrawal or pumping rate matches the recharge rate, the aquifer is a renewable resource; if the withdrawal rate exceeds recharge (termed: "overdrafting" or "mining") the aquifer becomes a nonrenewable resource. [See Jeffrey S. Ashley and Zachary A. Smith, *Groundwater Management in the West*, p.5 (1999)]

Some aquifers are "confined" — with the water trapped between two impermeable layers. When wells are drilled into confined aquifers, their pressure is usually sufficient to withdraw the water without a pump. The point at which confined aquifers are recharged may be hundreds of miles from where the water is withdrawn.

"Unconfined" aquifers form when water collects above an impermeable layer of rock or clay; the top of the saturated region of the aquifer is called the water table. Water is pumped out through wells and the water table rises and falls as the amount of precipitation changes as well as the withdrawal rate. [Ashley & Smith, *ib. pp. 5-6*]

Humans have been withdrawing groundwater for millennia, but it is only recently that technologies have been developed to pump large quantities of water from aquifers — thereby threatening their sustainability. Historically, windmills, centrifugal pumps, and other devices were used to withdraw relatively small amounts of groundwater. However, developments in pumping technology, the availability of cheap electricity, and sprinkler irrigation systems led to a dramatic increase in pumping in the 1930's and 40's — particularly in the Southern Plains. [Ashley & Smith, *ib. pp. 6-7*]

Perhaps the most well-known aquifer, the Ogallala, underlies the Great Plains and supplies water to residents of eight states. The Ogallala has been the subject of great concern due to decades of overdrafting. In some regions the withdrawal rate has been 14 times greater than that of the natural recharge rate, and has caused farmers in some areas to shift to dry land agriculture; in other areas, however, farmers continue to tap the aquifer for irrigation. [Ashley & Smith, *ib. p. 15*]

More than 28 trillion gallons of water are pumped from underground sources each year in the United States (US). [See Robert Glennon, "*Pinching Straws: Reforming Ground and Surface Water Law to Protect the Environment*," Rocky Mountain Mineral Law Institute (2003)] Approximately 90 percent of fresh water in the US is found in groundwater. According to one estimate, groundwater is the source of 33 percent of the fresh water used by 19 western states. Some 78 percent of the groundwater is used for irrigation, 14 percent for public supply systems, and 4 percent for rural domestic and livestock uses. [Ashley & Smith, *ib. pp. 3-4*] Another estimate found that groundwater supplies from 40-to-45 percent of all water withdrawals in the West and as much as one-half of withdrawals in the Rio Grande, Great, and Lower Colorado basins. [Dan Tarlock, "*Groundwater and Growth Management in the New West: Evolving Law and Practice*" — paper presented at the annual conference of the Natural Resources Law Center, Boulder CO, June 7-9, 2000, p. 2]

Groundwater Law

Groundwater & Drinking Water

Usage

Availability

Problems

Costs

The US Geological Survey reports the following percentage of state populations that use groundwater for drinking water:

Arizona	60 percent
California	45%
Colorado	22%
Idaho	96%
Montana	52%
Nevada	31%
New Mexico	90%
Oregon	40%
Utah	56%
Washington	61%
Wyoming	57%

[See Robert Glennon, "*Water Follies*" p. 31 (2002)]

Groundwater Problems and Challenges

There are several advantages in using groundwater. While water quality varies widely, much of it is of high quality and can be used for drinking water without treatment, unlike much surface water. Not only is groundwater pumped for municipal, industrial, and agricultural use — it is also increasingly being bottled as spring water. Millions of gallons of water are pumped each day to meet this five billion gallon a year demand in the US. Yet, bottled water is only a tiny fraction of US groundwater use, where some 28 trillion gallons are withdrawn each year — two-thirds of which is used for irrigating crops, representing more than 25 percent of the nation's water supply. [Robert Glennon, "*Water Follies*" pp. 1-3]

Groundwater is available throughout the year, in contrast to the rivers and streams in the desert West where water flow may slow to a trickle in the summer. Groundwater may be delivered at a lower cost than some surface water. Surface waters stored and transported in dams, canals, and ditches require expensive infrastructure, and evaporation and infiltration sap a significant amount of the water available. While pumps are required to extricate groundwater, the costs are generally much lower than the extensive storage and transmission systems that have been constructed in the West. [Robert Glennon, *Water Follies* pp. 28-29]

However, the tremendous increase in groundwater pumping has resulted in serious environmental problems. Groundwater mining has caused land subsidence that has resulted in damage in areas of Arizona, California, Idaho, Nevada, Texas, and Washington. In many areas where groundwater and surface waters are inextricably linked, pumping groundwater has dried up rivers and lakes and destroyed habitat for fish and riparian wildlife. Robert Glennon has described a number of cases in the West where our thirst for groundwater has damaged ecosystems:

- THE SANTA CRUZ RIVER, west of Tucson, Arizona, once had perennial water flows and formed a lush riparian corridor and a fertile wildlife and bird habitat. Groundwater pumping met the needs of Tucson residents, mining operations, and farming which dramatically lowered the water table, drained the river and destroyed the habitat.
- THE UPPER SAN PEDRO RIVER in Southern Arizona was "an extraordinarily rich and diverse riparian habitat," supporting some 300 species of birds, 83 mammalian species, and 47 amphibian and reptile species; Congress established the San Pedro Natural Conservation Area in 1988 and created a federal water right to protect the aquatic and wildlife resources. However, groundwater pumping to fuel the rapidly growing population has resulted in the river being labeled by the conservation group American Rivers one of the ten most endangered rivers in the United States, and today has only a narrow ribbon of trees along its banks.
- CALIFORNIA'S CENTRAL VALLEY — once an "American Serengeti" — was in the past characterized by extensive grasslands during summer, marshlands in winter and spring, and was home to grizzly bears, antelope, tule elk and wintering nests for ducks, geese, and cranes from Canada. By the end of the 1930's, irrigation had spread to millions of acres of farmlands, the Central Valley became a desert and the spawning waters for millions of chinook salmon had dried up.

[See Glennon, "*Pinching Straws*" chaps 3,4,8,11, and 12]

Groundwater can be expensive to pump. In some areas it generates electricity bills of thousands of dollars per month per well. As the water table is drawn down, drilling costs escalate and water quality often declines. In California and other coastal areas, groundwater withdrawals have allowed salt water to contaminate aquifers. Groundwater is a classic example of a "commons" — where the incentive for each user to overuse the shared resource results in an unsustainable level of consumption and eventual decline or loss of the resource. Unlimited access to a limited resource can eventually cause its destruction.

Groundwater Law

Interactions

Drought

Worldwide Concern

Management Disagreements

Sustainability

Different Rules

State Differences

A major challenge in managing groundwater is understanding the interaction of ground and surface waters and impacts of natural processes and human actions on the water supply. Surface water sometimes gains water and dissolved substances from aquifers. Groundwater is sometimes recharged by surface water. Such interchanges may affect both water quality and quantity. Withdrawals from aquifers may reduce the water available in surface waters and reduce the water available to surface water rights holders. Overlapping surface water watersheds and groundwater watersheds may not fully coincide, adding to the difficulty of accounting for surface water diversions and return flows. Diversions from streams may reduce groundwater levels. Determining contributions of groundwater to stream and lake contamination or surface water contamination of groundwater is also problematic.

The severity of the current drought in the West, one of most severe in the past 100 years, has placed additional pressure on the region's groundwater. Most of the Rocky Mountain region suffers from extreme drought conditions, and exceptional drought conditions are occurring in parts of Idaho, Montana, Wyoming, and Utah. Meeting burgeoning human needs and ecosystem protection requirements is a major challenge even when normal rainfall occurs.

The problems surrounding groundwater use are not unique to the US. Worldwide, some one billion people lack access to clean water, 2.5 billion do not have access to modern sanitation services, and 10,000-20,000 children die each day from preventable water-related problems. Population growth in developing countries puts tremendous pressure on existing water sources. [See Peter Gleick, *The World's Water: The Biennial Report on Freshwater Resources*, 2002-2003 p. 2 (2002)] Groundwater reservoirs are being pumped at unsustainable rates in China, Saudi Arabia, Mexico, and much of Africa. Southern European nations are also suffering from falling water tables and declining aquifers. [See Marq de Villiers, "Water: The Fate of Our Most Precious Resource" pp.6-7; 20-21 (2001)] In Mexico City — which is built on an aquifer — water pumping has caused significant land subsidence which has led to cracked water pipes resulting in the loss of some 40 percent of the potable water supply. In many places groundwater has come to be viewed as a nonrenewable, exhaustible resource. [Gleick, *ib.* pp. 49-50; 77]

There are major disagreements over how to manage groundwater. A US Geological Survey report, for example, argued that groundwater mining "is no more unsafe than the mining of any other mineral resource, provided it's recognized and planned." [Quoted in Ashley & Smith, *ib.* p. 15] In some areas, where recharging of aquifers requires long periods of time, overdrafting may be the only way to meet pressing needs for water. Rapidly growing cities are at a disadvantage under the legal system of "prior appropriation" that governs withdrawals from surface water in the western US. Prior appropriation gives senior rights to those who established earliest claim to the water, in many cases agricultural operations — thus, cities may have junior rights that are only honored if all senior rights have been satisfied. While it is difficult to obtain new water rights for surface water, groundwater is usually not allocated according to the same rules. In some areas of the West, groundwater withdrawals are governed by the common law "rule of capture" (see Frownfelter/Trejo, TWR #1), allowing anyone who can drill a well to get access to the water to use it. When prior appropriation rules are used to govern the withdrawal of groundwater, they operate as they do for surface water, allowing those who first made withdrawals to enjoy senior water rights. [Robert Glennon, *Water Follies*, pp. 30-31]

From the perspectives of both societal and ecological sustainability, groundwater laws and policies need to ensure that: withdrawal and recharge rates are balanced; pumping of groundwater meets both municipal and agricultural needs; and both human and ecosystem demands are satisfied. Critics argue that state and local governments have, for the most part, failed to put in place an effective regulatory scheme to protect groundwater resources and to integrate protection of ground and surface waters.

Some Western states use different rules to govern ground and surface waters, but even in states that have coordinated management of the two types of water sources there are problems. One set of coordinated practices — i.e., "conjunctive use" — allows senior water rights owners of surface waters to obtain water to which they are entitled by pumping groundwater in ways that reduce conflict between senior and junior water rights holders. But this coordinated use often results in increasing the withdrawal of water from the hydrological system at unsustainable levels, thereby diverting water needed to sustain riparian habitat and in stream wildlife. [Glennon, "Pinching Straws"]

Groundwater Laws in Western States

The following examines groundwater laws in western states as a step in encouraging debate over how groundwater law might better contribute to the sustainability of communities throughout the West.

Some states have enacted comprehensive groundwater statutes while others have relied on adaptations and interpretations of long-standing laws. Nonetheless, all western states have relied on four different legal doctrines to govern groundwater. [The discussion of these four doctrines is based on Ashley & Smith, pp. 8-10.]

Groundwater Law

Commonalities

THE FOUR DOCTRINES INCLUDE:

- THE COMMON LAW, OR ABSOLUTE OWNERSHIP, DOCTRINE provides for unlimited withdrawal of water below an owner's land, regardless of impact to other landowners. The doctrine still guides water law in many eastern states, where water is abundant. It served as the basis for developing groundwater resources in most Western states until competition for the limited resource compelled changes.
- THE AMERICAN RULE, OR REASONABLE USE, DOCTRINE limits withdrawals to what is necessary for reasonable/beneficial purposes. Water cannot be wasted or transported off the land if that interferes with the rights of adjacent landowners to also enjoy the beneficial use of the groundwater.
- THE CORRELATIVE RIGHTS DOCTRINE was devised as an alternative to absolute rights. It provides that landowners situated above a common groundwater source have equal or correlative rights with other users to a reasonable amount of water for reasonable beneficial uses on their land.
- THE PRIOR APPROPRIATION DOCTRINE, as is true for surface water, holds that the first party to put the water to beneficial use has a right to continue to do so, and those who appropriate water afterward have junior rights.

Beneficial Use

In addition to the above doctrines, "beneficial use" is a key principle underlying water law. This principle seeks to encourage economic efficiency in the use of water by ensuring that it is used "beneficially"—however, there is no universal understanding of what uses are "beneficial." Water for domestic purposes, irrigation, manufacturing, and stock watering are widely recognized as constituting beneficial use, but jurisdictions disagree over whether water reserved for instream flow to protect fish or riparian habitat or recreational opportunities also qualify as beneficial use. [Ashley & Smith, p. 10]

Prior Appropriation

Eight of the Western states have adopted some form of the prior appropriation doctrine as a way to encourage landowners to make long-term investments in pumping and water development. While that has provided stability in water development, it favors those who established water rights first, and has placed some limits on subsequent changes in land use and economic activity. Many states have developed flexible ways of interpreting prior appropriation to allow for changing circumstances, rather than rewriting water laws. Other states have responded by enacting groundwater statutes.

Surface & Groundwater Management

At one level, states appear to be quite similar in providing for coordinated management of surface water and groundwater, but groundwater laws are quite detailed and complex and differ considerably across the West. Six states provide for coordinated management of groundwater and surface water, especially where the two sources of water are clearly interconnected. Arizona law provides for a comprehensive, innovative system of conjunctive management of groundwater. Colorado has a complicated system of groundwater management that provides different standards for different kinds of basins. Idaho's groundwater law also provides for conjunctive management. Montana law focuses on regular assessment of groundwater conditions and the development of plans to ensure their sustainability. New Mexico has a complicated regime that designates 33 groundwater basins and requires integrated management of surface and groundwater. Oregon, Utah, Washington, and Wyoming also provide for conjunctive use and integrated management of connected water. Conjunctive use allows states to regulate a ground water right when withdrawals harm surface water rights owners.

In Nevada, state law governs ground and surface water separately, although in practice there is some coordination. California's system separates management of ground and surface water, but integrated planning occurs at the local level. Some states have chosen to make water rights appurtenant to the land on which it is used in order to reduce the possibility of a change in the place of use and to reduce changing existing patterns of water runoff in order to protect appropriators. Some states limit the amount of pumping by placing a cap on the percent of the total reservoir that can be drawn down while others simply require beneficial use. Such limits protect other appropriators who rely on other uses. States also differ in how they define different kinds of ground water — definite underground channels, percolating water, underground water that is clearly connected to surface water versus water that is not connected, and other differences.

Common Challenges

While there are considerable differences in the details of state ground water law, the Western states share common challenges of ensuring an adequate supply of water to meet growing population needs and balancing withdrawals for human use with protecting instream flows and other ecological needs. As groundwater is depleted faster than it is recharged, state governments will need to choose whether to give priority to ensuring the sustainability of ground water and conserving resources for future generations or to give priority to meeting the growing demands of current users. They also must decide whether to secure sufficient water for healthy ecosystems or emphasize withdrawal to meet direct human demand.

It is difficult to compare state laws since what is described as prior appropriation in one state may be, in practice, much different than that which is practiced in another.

Groundwater Law

Key Differences

SOME KEY DIFFERENCES IN STATE WATER LAWS INCLUDE:

States with CONJUNCTIVE MANAGEMENT of surface and groundwater:

Colorado, Idaho, New Mexico, Oregon, Utah, Wyoming

States with NO CONJUNCTIVE MANAGEMENT:

Arizona, California, Montana, Nevada, Washington

States governing groundwater through PRIOR APPROPRIATION:

Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

States governing groundwater by the REASONABLE OR BENEFICIAL USE requirement:

Arizona, California, Montana

Leader

SOME MAJOR PROVISIONS OF STATE GROUNDWATER LAWS INCLUDE:

ARIZONA

- Leader in development of groundwater policy; 1st law in 1945
- Ground and surface waters not managed conjunctively
- 1980 Groundwater Management Code provides a comprehensive framework governing withdrawal, transportation, use, conservation, and conveyance of rights; goals are to control overdrafting, allocate limited groundwater efficiently, and augment supply through development
- Different management requirements apply to different areas:
 - Active management areas (AMAs): strictest level of management
 - *Permits required for all non-grandfathered wells in AMA
 - *Each AMA has detailed management plan for specific time period; conservation requirements are tightened in each new time period
 - Irrigation non-expansion areas: can only expand irrigated land if the lands have been irrigated between 1975-1980
- Reasonable and beneficial use limits on groundwater rights elsewhere
- Developers must certify adequate water to meet needs for 100 years
- Owners with surplus supplies of water can store water underground for later use, including Colorado River interstate surface water

CALIFORNIA

- Ground and surface waters are not managed conjunctively, but surface waters include subterranean streams flowing through definite and known channels
- State encourages management at local level through creation of special districts
- There are three basic rights in groundwater, in priority:
 - 1) Overlying landowners have equal, correlative right to withdraw water; each to use reasonable share; no permits required
 - 2) Others may appropriate surplus rights
 - 3) Prescriptive rights can ripen by "adverse possession" (ie, use adverse to current/previous owner, continuous for at least five years) by developing wells and conveyance systems
- Special enabling acts for groundwater districts in specific basins govern conservation, extraction, replenishment programs, priority of rights in times of shortages, priorities for use
- General acts create irrigation and other water districts with no authority to limit extractions
- Counties have passed ordinances to govern groundwater withdrawal.
 - Some provide for conjunctive use
 - Some allow export of groundwater

COLORADO

- Conjunctive management system: Groundwater is assumed to be tributary to surface water and is governed by prior appropriation
- Goal is full economic development; some aquifers are mined
- Groundwater Commission governs water rights in eight designated basins; state engineer and water courts regulate non-designated groundwater and groundwater in Denver Basin aquifers
- Interbasin transfers of water are allowed except for designated basins
- 1965 Ground Water Act and 1969 Water Right Act defined different types of groundwater
 - 1) Deep groundwater — not connected to surface waters
 - * Designated water — under natural conditions does not recharge or supplement surface streams
 - * Nontributary Groundwater—outside of a designated basin
 - Pumping will not affect surface waters within 100 years, can withdraw at 1% per year by overlying landowner; well permit from state engineer is required

Three Rights

Conjunctive

Groundwater Types

Groundwater Law

Denver Basin

* Not Nontributary and nontributary Denver basin groundwater (In the Denver Basin, two types of groundwater have been designated: nontributary and not non-tributary. Both are allocated to overlying landowners and can be withdrawn at a rate of one percent of the total water in the aquifer per year over an extended life-time of 100 years. Nontributary water, as the name implies, is water that does not affect surface water. "Not nontributary groundwater" refers to water in four aquifers in the Denver Basin that does not meet the legal definition of nontributary water; augmentation plans must be developed and approved before withdrawals from these four aquifers can occur)

2) Tributary Water—water below the surface that is connected to a river

* Governed like surface waters (prior appropriation); wells require permit from State Engineer

- Denver Basin water is allocated to overlying landowners except the part of the basin included in a designated groundwater basin
 - There are two types of water outside of designated basins — 1) Not nontributary groundwater; and 2) Nontributary groundwater — and the pumping of either requires replacement of water to surface stream
 - Landowners can withdraw at rate of 1% per year until exhausted
 - Denver basin groundwater outside of any designated basin is allocated like nontributary groundwater; use must be replaced or augmented by returning part of pumped water to the stream

IDAHO

- Began regulating groundwater in 1951, permits required since 1963 (except for domestic use) to drill and to appropriate water
- Groundwater and surface water both subject to prior appropriation
- Department of Water Resources Director identifies critical groundwater areas and approves management plans, and can: deny permits; curtail withdrawals; and require reporting and measuring
- Conjunctive management of ground and surface water rights
 - All water in Snake River Basin is presumed to be connected
 - Rules curtail use of junior groundwater rights when shortfalls occur
 - If groundwater districts can't provide the entire quantity of water covered by water rights, pro rata reduction of water for irrigation occurs within the district

MONTANA

- Groundwater defined as any water beneath surface
- State law seeks to: ensure optimal beneficial use without waste; secure maximum economic and social prosperity; conserve supplies for recreation and conservation; systematically monitor and assess quality of aquifers; and maintain long-term records of chemistry and water level
- Reasonable use is required for appropriating water — including groundwater — and can include minimum stream flows and probability of adverse environmental impact
- Department of Natural Resources creates controlled areas where: withdrawals exceed recharge or likely to exceed recharge in the future; there are significant disputes over rights; declining groundwater levels occur; or withdrawals adversely affect water quality
- Areas designated as controlled can: close area to further appropriation; apportion withdrawal limits among rights holders based on priority dates; give preference to domestic and other uses; and designate temporary areas for 2 years.

NEVADA

- Ground and surface water regulated separately by law under prior appropriation rules; in practice, managed conjunctively, State water engineer can issue rights to underground water to supplement inadequate surface supplies
- State Engineer issues permits to appropriate groundwater; granted even if water level will be lowered, as long as other right-holders are protected; must deny application if detrimental to public interest
- Surface water can be stored underground for later use
- State Engineer can designate a groundwater basin for administration:
 - Permit required for wells
 - If basin is being depleted, can issue rules "essential for the welfare of area involved"
- California-Nevada Interstate Compact: each state can develop groundwater as long as it doesn't reduce amount of water the other state would have received if groundwater was not developed

NEW MEXICO

- Groundwater governed by prior appropriation
 - 33 groundwater basins; water must be put to beneficial use before designated date is a right; water used after requires a permit

Critical Areas

State Goals

Seperate Regs

Conjunctive Aspects

Groundwater Law

Offsets

- State engineer issues criteria for gradual mining of mined basins (i.e., aquifers unconnected to surface waters)
 - * Each driller has a correlative right to take his/her share over a designated period of time
- For groundwater connected to surface water, Engineer protects existing wells and surface water rights
- Ground and surface water conjunctively managed
 - Engineer may require depletion of groundwater offset by return of water such as treated effluent to the river
 - State law authorizes injecting treated water into depleted aquifers
- Water banking: Farmers can lease water without losing long-term rights

OREGON

- Prior appropriation—permits required for both surface and groundwater appropriation
- Conjunctive management where surface and groundwaters are connected
 - Water Resources Department to ensure groundwater appropriations don't interfere with more senior surface rights
 - Certain water uses are exempt from permit, such as domestic use <15,000 gal/day; commercial use <5,000 gal/day and watering stock
- Aquifer storage and recharge
 - License needed to divert, store, and recover water
 - Water withdrawn only for original beneficial use
 - License good for not more than 5 years
- Water management policies and objectives governing appropriation within each basin
 - Water Resource Commission can designate critical groundwater management areas if overdrafts, contamination, or other problems occur
 - Basin may be closed to further appropriation or have limits set on withdrawals by existing right holders
 - Rules require groundwater users to drill wells away from watercourse to protect surface waters (presumption of hydraulic connection to surface water if well is within 1/4 mile of surface water and in an unconfined aquifer)
- Conservation projects can result in right to conserved water for any beneficial purpose, minus one-quarter of the water — which is saved for environmental purposes

UTAH

- Prior appropriation for surface and groundwater
- Conjunctive management of surface and ground water
- Water is fully appropriated and agricultural rights are often senior
 - Need to convert from agricultural to Municipal & Industrial (M&I), conserve, and treated wastewater to meet growing demand
 - 2002 law: if water users fail to use entire water allocation for five years, unused portion is forfeited and reverts to public
- State Engineer adopts groundwater management plans where overdrafting occurs, which can set maximum annual withdrawals and well spacing requirements
- Artificial recharge and recovery is occurring through pilot projects
 - Permit allows appropriator to trace water in and out of reservoir and avoid conflicting claims

WASHINGTON

- Prior appropriation for surface and groundwater
 - Groundwater is all waters existing beneath the land surface or bed of stream or lake or other surface water body
 - Permits required for all withdrawals except watering stock, watering lawns or gardens <1/2 acre, or 5,000 gal/day for domestic or industrial purposes
 - Two types of groundwater
 - 1) Natural: exists wholly due to natural processes
 - 2) Artificial: intentionally or incidentally from irrigation
 - * Only natural groundwaters and abandoned artificial waters are subject to appropriation (abandoned requires 5 years nonuse)
- Comprehensive state water resources plan
 - Watershed Resource Inventory Areas for areas with allocation problems
 - Department of Ecology sets minimum water flows for streams and lakes
 - Department of Ecology can designate groundwater areas and manage to prevent overdrafts

Conjunctive Where Connected

Critical Areas

Conservation Incentives

Needs

Groundwater Types

Comprehensive Plan

Groundwater Law

Correlated Rights

Preferences

Management Options

Critical Questions

- * Can order decrease in withdrawals according to priority of rights
- * Can create groundwater management program for each area: long-term monitoring; annual withdrawal rates; safe-yield guidelines — ensuring long-term benefits to state residents
- Out-of-state water use allowed
- Aquifer storage and recovery projects require water right and reservoir permit

WYOMING

- Prior appropriation for groundwater
 - Groundwater is any water under the surface of land or bed of surface waters
- Where ground and surface waters are connected, priorities of rights to use it are to be correlated and a single schedule of priorities established
 - Groundwater permits specify that they are subject to regulation and correlation with surface water rights if waters are determined to be connected
- Control areas created where withdrawals are approaching recharge rate, levels are declining, waste is occurring, or need to protect public interest
 - Control areas create control area advisory board—5 people living in area
 - If state engineer finds insufficient water, can close area to further appropriation, determine permissible withdrawal and apportion total among appropriators, specify well spacing
- Domestic and stock use have preference
- Special rules govern water appropriation in Yellowstone Park
- Legislature must approve export of water outside the state

Encouraging Signs / Questions / Considerations

There are some encouraging signs in Western water law. Some states recognize the interconnectedness of surface and groundwater in many areas. State laws allow for designation and careful management of threatened groundwater basins. Many states have the regulatory power to protect the long-term viability of aquifers and are engaged in careful assessments and monitoring of aquifer water quality and quantity. Some states recognize the value of ecosystem services (see Heagerty/Ockner, this TWR) and minimum water requirements for ecosystem health.

However, many challenges remain in generating sufficient political will to make the difficult choices now to ensure the sustainability of groundwater. The sooner states act to address these challenges, the more options they are likely to have. Conversely, the longer the wait, the narrower, more expensive, and less attractive their choices are likely to be.

THREE QUESTIONS ARE CRITICAL:

- 1) How can states integrate surface and groundwater management?
 - Interactions are often complex, uncertain; how can we understand them better?
 - How can states integrate separate rights and priorities for ground and surface waters?
 - How can states monitor and regulate millions of small, exempt wells?
- 2) How can states use their groundwater in securing adequate water to meet growing needs?
 - What mix of conservation standards, infrastructure improvements, increased prices and other approaches are appropriate?
 - Should new applicants for water rights be required to purchase and retire existing ones?
 - Should states allow mining of separated aquifers?
 - Should states raise water prices so they reflect the true cost of using water and encourage the most valued use?
- 3) How can states balance consumption and ecosystem protection?
 - Both are in our interest; ecological economics demonstrates the economic value of ecosystem services; how does that value compare with other values—agriculture, industry, stock watering, domestic use?

FOR ADDITIONAL INFORMATION:

GARY BRYNER, Brigham Young University, 801/ 422-3276 or email: gary_bryner@byu.edu.

Gary Bryner is a Research Associate at the Natural Resources Law Center (NRLC) and a Professor with the Public Policy Program, Brigham Young University. The author wishes thanks to Elizabeth Purcell, University of Colorado School of Law, for research help and the William and Flora Hewlett Foundation, and the Richard and Rhonda Goldman Fund for financial support for a broader report published by NRLC, entitled “*Groundwater Law Sourcebook of the Western United States*” [available from website: www.colorado.edu/law/NRLC]

WATER BRIEFS

GW CONTAMINATION AZ**ADEQ PROPOSES SUPERFUND SITE**

On July 1st, Arizona Dept of Environmental Quality Director Steve Owens proposed adding an area in central Phoenix to the state superfund program. Groundwater contaminated with perchloroethylene (PCE) was discovered at the site in 1995. PCE is a chemical with a wide range of industrial applications, and was regularly used in dry cleaning operations. A dry cleaning facility located in a shopping center has been determined to be the source of the contamination. See Axline/Miller this TWR.

Analytical results from sampling conducted at the site confirm the presence of PCE in soil and groundwater. Monitoring wells installed in 1995 detected PCE concentrations ranging from 200 to 15,000 micrograms per liter, well above the groundwater standard of 5 micrograms per liter. The contamination came from two on-site septic tanks that have since been removed.

Despite the high levels of PCE, ADEQ officials say the plume does not affect any current drinking water source used by Phoenix. There are no drinking water production wells within the confines of the site, but ADEQ is closely monitoring the movement of the groundwater plume. Two Salt River Project irrigation wells near the site have been tested, and PCE levels have been detected below the standard. "Even though drinking water sources in the area have not been affected we will develop an appropriate strategy to clean up the site, and then identify the parties responsible for the contamination and seek to recover costs from them," Owens said.

ADEQ will accept public comments on the proposed listing until Friday, July 30, 2004. Members of the public may request site information and submit comments by mail addressed to Debi Goodwin, Site Assessment Unit, 1110 W. Washington Street, Phoenix, AZ 85007.

For info: Debi Goodwin (ADEQ), 800/234-5677, email: dq1@ev.state.az.us, or website: www.adeq.state.az.us/

PECOS BASIN PURCHASES NM

New Mexico's Interstate Stream Commission (NMISC) has received more than 160 bids from landowners offering to sell more than 27,000 acres of land and associated water rights in the lower Pecos River Basin under the state's water and farmland acquisition program. NMISC staff evaluated bids considering criteria set forth in the statute that authorizes the purchase program and entered into negotiations with the prospective sellers. As of today, the state has entered into nine lease agreements that contain an option to purchase the land and water rights associated with about 2,000 irrigated acres. Negotiations are ongoing with 14 additional potential sellers, and NMISC staff will continue to evaluate about 145 additional bids.

"A variety of factors can impact the purchase price," said NMISC Director Estevan López. "For example, prices vary depending on whether the water right is junior or senior, whether the water right is a surface or groundwater right, the percentage of historical use, and the location of the water right. NMISC established general pricing guidelines. State statute requires us to make sure the offers are competitive in order to optimize the expenditure of state's resources and conserve taxpayer dollars with the ultimate goal of increasing flows in the Pecos River."

The acquisition program was first proposed in 2002 by the Lower Pecos River Basin Committee, comprised of local stakeholders along the lower Pecos River, including: irrigation districts; county and municipal governments; and business representatives. The legislation authorizes the NMISC to purchase up to 6,000 acres of land and water rights in Carlsbad Irrigation District (CID) and up to 12,000 acres of land and water rights above Brantley Dam, which includes the Pecos Valley Artesian Conservancy District (PVACD) and the Ft. Sumner Irrigation District (FSID).

The acquisition program is one component of a long-term Consensus Plan devised by the Lower Pecos River Basin Committee as a means of insuring that New Mexico meets its interstate delivery obligation to the State of Texas

under the Pecos River Compact. NMISC is responsible for compact compliance, investigating, conserving, protecting, and developing the water resources and stream systems of New Mexico as well as carrying out plans and programs for beneficial uses in the state. The Commission has water planning responsibility for the state. **For info:** Karin Stangl, NM State Engineer's Office, 505/ 827-6139

**SAND AND GRAVEL REGS WA
ECOLOGY REVISES GENERAL PERMIT**

The Department of Ecology (Ecology) is inviting comments on revisions to a permit aimed at protecting water quality from the pollution discharged by sand-and-gravel operations. Approximately 940 facilities in Washington are covered under the sand-and-gravel general permit. These facilities include sand-and-gravel mines, rock quarries, clay mines, concrete batch plants and asphalt plants. Federal and state laws require the permit because these operations discharge water that may be polluted, such as sediment from gravel washing, oil and grease from trucks and heavy equipment, and alkaline waste water from concrete plants. The permit requires companies to take steps to ensure that surface and ground waters are protected, and to monitor water quality on a regular basis.

Ecology first issued the permit in 1994 and must reissue it every five years. "Before this permit went into effect, many facilities did not understand how to manage storm water and prevent water pollution. This lack of understanding posed a threat to water quality around the state," said Jeff Killelea, an Ecology permit writer. According to Killelea, the permit not only decreased the amount of water pollution from these sites, but also increased operational efficiencies and resulted in greater re-use of materials. For 2004, Ecology is proposing additional requirements for discharges to waters that are already impaired due to turbidity, pH or temperature. Under the proposal, companies would be required to comply with approved water cleanup plans, and certain

concrete batch plants would have additional requirements to monitor and protect groundwater quality. Minor changes in terminology and formatting should make the permit easier to understand and implement. Comments on the proposed permit revisions will be accepted at two upcoming public workshops in August. For a copy of the proposed permit, contact Jeff Killelea, Department of Ecology, PO Box 47600, Olympia, Wash., 98504-7600; 360/ 407-6127; or email: jkil461@ecy.wa.gov. The permit and related documents are also available on the Internet at www.ecy.wa.gov/programs/wq/sand. Comments on the permit must be submitted to Ecology no later than August 19. After comments, Ecology plans to issue the final permit on September 15.

For info: Leslie Thorpe, Ecology, 360/ 407-6848, or website: www.ecy.wa.gov

PESTICIDE BUFFERS NW TO REMAIN DURING APPEAL

A panel of the 9th Circuit Court of Appeals refused to set aside a lower court ruling prohibiting the spraying of certain pesticides near salmon streams while chemical companies appeal. The pesticide industry group CropLife and grower groups requested a stay that would remove the no-spray buffers during the appeal (see Beale, TWR #4). The district court issued the January 2004 injunction that put in place no-spray zones of 100 yards for aerial applications and 20 yards for ground applications of more than 30 pesticides. The district court's injunction also required in-store warnings to inform consumers that seven urban-use pesticides may harm salmon. As a result of today's Ninth Circuit decision, the salmon protections put in place by the injunction will remain in place throughout the appeal. The court also scheduled the consolidated appeals to be heard during the week of September 13th in Seattle.

For info: EPA website: www.epa.gov/espp/ - Oregonians for Food & Shelter website: www.ofsonline.org/ - NW Coalition for Alternatives Pesticides (NCAP) website: www.efn.org/~ncap

COLUMBIA RIVER DISCHARGES \$30 MILLION IN FINES SOUGHT

The Northwest Environmental Defense Center (NEDC), Columbia Riverkeeper (CRK) and the Pacific Environmental Advocacy Center (PEAC) sent formal notice on June 15th that they intend to file suit seeking over \$30 million in fines against two California companies with a history of water pollution violations. The companies have been illegally dumping large quantities of contaminated chicken waste into the Columbia River from the Pt. Adams processing facility just west of Astoria. Two California based companies, California Spray Dry and Modesto Tallow, have been dumping chicken waste from the Pt. Adams processing plant for approximately the last eight months without any state or federal permit that allows discharge of the waste. These discharges constitute both criminal and civil violations of federal Clean Water Act and Oregon law. After NEDC contacted the US Environmental Protection Agency about the violations, EPA enforcement agents, armed with a federal search warrant, raided the Pt. Adams facility last week.

"It's incredible that these guys thought they could just move up to Oregon from California and start illegally dumping massive amounts of chicken waste into the Columbia River," says NEDC Executive Director, Mark Riskedahl. "We know that Modesto Tallow was fined over \$600,000 and had a plant manager sentenced to a year in jail for similar violations at a plant in California, but it looks like they still have not learned their lesson."

The Pt. Adams facility has a permit that allows for some discharges of waste from fish processing, but Modesto Tallow was specifically informed by Oregon DEQ that they would need a new permit before they could discharge anything other than seafood processing byproducts. Nonetheless, the company has been receiving and processing chicken waste from Foster Farms in Kelso, Washington.

"You don't often see the type of blatant deceit that has happened here," explained attorney Melissa Powers, with the Pacific Environmental Advocacy

Center who is representing NEDC. "Point Adams informed DEQ that it would not be discharging anything from October, 2003, until this June, but then apparently started its illegal discharges right after that. We're encouraged that EPA is taking these violations seriously, but we think that a citizen suit is also necessary to stop this illegal conduct."

For info: Melissa Powers, 503/ 768-6727

STORMWATER FINE WA MEASUREMENT ISSUE

The Washington Department of Ecology has fined Sound Refining of Tacoma \$24,700 for failing to measure the pollution in its storm water, as required by its state discharge permit. Stormwater runoff from the bulk-oil storage facility on Marine View Drive flows directly into the Hylebos Waterway of Commencement Bay.

A new owner of the company, SRI Acquisition Corp., will get the bill, even though the violations happened under different owners. "Without monitoring, there is potential to carry oil, grease and metals back into Commencement Bay, which we've worked so hard to clean up," said Carol Kraege, manager of Ecology's industrial section. "Measuring what is being discharged and reporting the monitoring results are the backbone of the state's permit system, which is designed to prevent pollution in the first place." Ecology discovered the monitoring information was missing while reviewing the company's permit file when the wastewater-discharge permit was up for renewal earlier this year. Ecology placed stringent monitoring requirements for storm water in Sound Refining's last permit after discovering potential pollution sources on the site in the late 1990s.

The company has 30 days to apply for relief from the penalty and 30 days to appeal it to the state Pollution Control Hearings Board. **For info:** Sandy Howard, public information manager, 360-407-6239 Ecology's Web site: www.ecy.wa.gov

WATER BRIEFS

BPA SUMMER SPILL DECISION

OR/WA

TRIBES PREPARE LITIGATION

A federal plan reducing summer spill at four Columbia and Snake River dams was given the go-ahead July 6th by Brig. Gen. William T. Grisoli of the U.S. Army Corps of Engineers. The Corps decision cites a favorable findings letter issued by NOAA Fisheries that concludes the proposed spill and flow modifications meet the needs of affected fish listed under the ESA. Officials from the Bonneville Power Administration (BPA) say the plan will save Northwest ratepayers \$18 to \$28 million dollars this year. See TWR #3 Briefs for previous coverage.

Responding to BPA's decision, Rick George (lead fish and wildlife staff person for the Confederated Tribes of the Umatilla Indian Reservation) told TWR that "the Tribes continue to adamantly oppose the decision to reduce spills. The decision is totally inconsistent with existing federal policy and law. It is inconsistent with the federal government's Trust responsibilities to uphold Treaty rights to utilize salmon for cultural uses and commercial uses." George went on to say that the Tribes have made a "business decision to sue" and are "actively preparing to enact that decision." George also told TWR that "The Tribes don't like to litigate but feel they have no choice when the federal government purposely and willfully kills more salmon by their action."

The plan provides for spill at Bonneville, John Day, The Dalles and Ice Harbor dams throughout July, as called for in the National Marine Fisheries Service 2000 Biological Opinion (www.nwr.noaa.gov/1hydrop/hydroweb/fedrec.htm). It ends spill at Ice Harbor and John Day dams in late August after most fish have passed the dams, according to BPA, and eliminates spill entirely in August at Bonneville and The Dalles dams. Spill, which helps juvenile fish pass safely downriver, occurs when water is sent through spillways instead of power-producing turbines.

To offset any potential harmful effects, BPA will fund additional habitat and hatchery projects, enhance July flows in the lower Snake River, strengthen an existing predator control program and improve rearing conditions for fall chinook in the Hanford Reach. Research will continue on the survival benefits of a new spill passage technology at Bonneville Dam and on the effects of alternative spill operations at Ice Harbor Dam. The plan is for a one-year operation for 2004.

Leaders of the Columbia River treaty tribes denounced the revised proposal on June 10th as an attempt to squeeze more power at the expense of hard-fought salmon protections. The Tribes view the revised spill-reduction plan as merely continuing the agencies' charge toward erasing a program that helps young salmon safely migrate over Columbia and Snake river dams and as a "sell out" to ship more electricity to power-hungry California. Tribal scientists estimated tens of thousands of adult fish – including some ESA-listed populations – would die if the Corps and BPA reduce the summer program of spilling water.

Kathryn Brigham, a member of the Board of Trustees and the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Fish and Wildlife Committee, said that the Tribes "were surprised to see that BPA is suggesting, as an 'offset,' changes to certain hatchery releases that may violate an order" in an on-going case. "The existing approach for handling Lyons Ferry hatchery fish was negotiated by the *U.S. v. Oregon* parties-including the United States-and an agreement was entered as a binding order by the federal district court." Antone Minthorn, Chairman of the CTUIR Board of Trustees, concluded by saying that "the federal agencies simply cannot provide in-kind, in-place mitigation for the fish lost. This is contrary to the Pacific Salmon Treaty between the United States and Canada. It violates the Treaty of 1855 between the United States and the CTUIR. When the rights secured by such treaties are honored, the fish are protected, and everyone benefits. By disregarding these rights — as this proposal does — the salmon and the people will suffer."

For info: Mike Hansen (BPA) 503/ 230-5131, website: www.salmonrecovery.gov/, Rick George, (CTUIR) 541/ 966-2352

FERC MUST RESPOND

ID

HELLS CANYON / SNAKE RIVER ESA

The DC Circuit Court of Appeals granted a writ of mandamus on June 22nd compelling FERC to respond to a 1997 petition requesting that the agency consult with NOAA Fisheries on the adverse impacts the Hells Canyon Complex has on endangered salmon and steelhead. The court concluded that "petitioners are entitled to an end to FERC's marathon round of administrative keep-away and soon," ordering FERC to take action on the petition within 45 days. The court acknowledged that a writ of mandamus is "an extraordinary remedy reserved for extraordinary circumstances," but found that FERC's "unreasonable delay presents such a circumstance because it signals the 'breakdown of regulatory processes.'" The decision can be accessed at FERC's website: www.ferc.gov/legal/court-cases/opinions.asp (*American Rivers and Idaho Rivers United v. FERC*, No. 03-1122, pages 8, 13 (D.C.Cir. June 22, 2004)).

The Hells Canyon Complex, a massive, three dam project on the Snake River, is owned and operated by Idaho Power Company. Idaho Power is currently in the process of relicensing this facility, but the earliest the new license would be issued is 2006, with the relicensing expected to take much longer. While FERC concedes that it must engage in ESA consultation over issuance of the new license, today's court decision goes to the controversy over whether FERC must also engage in ESA consultation over the current license, issued in 1955. Snake River salmon and steelhead were added to the endangered species list in the early 1990s and since that time, FERC has never consulted over the impacts of the Hells Canyon project.

As part of Idaho Power's relicensing process, FERC recently rejected objections by Idaho Power wherein the company had claimed that additional studies ordered by FERC were not warranted. FERC's staff dismissed those objections: "Our review of your license application

indicates operation of the Hells Canyon Complex has the potential to affect downstream aquatic and terrestrial resources, including salmon, along with other environmental resources, primarily as a result of the project's regulation of approximately 1 million acre-feet of water annually." See FERC Response to Idaho Power Company's objections to May 4, 2004, 06/29/2004, available at <http://elibrary.ferc.gov/idmws/search/docview.asp#1> Idaho Power is not sure if it will appeal the decision to the full commission.

For info: Nicole Cordan, Save Our Wild Salmon, 503/ 703-3733, or Jonathan Lovvorn, Meyer & Glitzenstein, 202/ 588-5206 (ext 12)

MONTANA/WYOMING

TALKS CONTINUE

The states of Montana and Wyoming are continuing meetings aimed at resolving their differences over surface water allocation in the Tongue and Powder River basins following Montana's "call" for water from Wyoming (see TWR #4 Briefs). Jack Stults, the Administrator of the Water Resources Division of Montana's Department of Natural Resources and Conservation, told The Water Report that the two states met via a conference call June 30th to discuss a wide range of topics, including the need to continue providing detailed information to each other about their respective water use. The parties discussed historic irrigation in both states.

The problem is the Yellowstone River Compact "is pretty silent concerning pre-1950 water rights, with only a few sentences of broad language," Stults said. "It would be much better to have more sophisticated language to deal with shortages." The states have begun working on "terms of reference", i.e. a document to define their efforts and the basis they are working from, and eventual agreement of a "goal."

"Both states want to resolve the situation without litigation and are still working cooperatively to find a practical approach," according to

Stults. There is no set date for two Governors to meet. The next meeting on the technical aspects is scheduled for early August.

Stults provided an example of just how dire the drought is. The Tongue River flows at the Montana border are at all-time lows. The previous all-time low flow for June 23rd was 150 cfs, and the flow this year on that date was 129 cfs. Contrast that with the median flow of 495 cfs for June 23rd.

For info: Jack Stults, MWRD, 406/ 444-6605

NOAA DAM SETTLEMENT CA

The National Oceanic and Atmospheric Administration (NOAA) entered into a settlement agreement with a local rancher to help protect steelhead listed as "threatened" under the Endangered Species Act. The agreement was reached between NOAA Fisheries and James Soper, the operator of Hedgpeh Ranch, after an estimated 34 threatened Northern California juvenile steelhead were killed in House Creek, a tributary of Gualala River, in May of 2002. An investigating team from NOAA Fisheries Office for Law Enforcement, California Department of Fish and Game, and biologists from NOAA Fisheries Office of Protected Resources in Santa Rosa, determined the steelhead mortality occurred when a tractor was employed to remove woody debris from behind two flashboard dams on the ranch's property. The tractor made numerous passes through House Creek, thereby damaging the streambed and killing young-of-the-year steelhead fry in the tractor's path.

Soper has taken full responsibility for the ESA violation, and has agreed to allow NOAA Fisheries to remove the two flashboard dams in House Creek, which have been in place for decades. Removal of the dams should greatly improve the habitat for steelhead there, NOAA officials said. The removal of the dams will be completed once public funds have been obtained. The settlement also includes a \$150,000 penalty, which will be suspended provided Soper does not commit a future violation of the ESA within the next 10 years. The settlement is in lieu of a hearing before an administrative law judge.

There is an ongoing effort by NOAA Fisheries, CDFG, and the Sonoma County District Attorney's Office to remove all illegal seasonal dams from salmon and steelhead streams in Sonoma County.

For info: NOAA Fisheries: <http://www.nmfs.noaa.gov>

SNOW SURVEY FUNDS WEST WS WATER COUNCIL LOBBIES

The Western States Water Council (WSWC) sent a letter signed by representatives from 16 states to Senator Robert Bennett, Chairman of the Subcommittee on Agriculture, on June 21st, to express their concern over administrative cuts to USDA's snow survey and water supply forecasting program budget. The Administration's cuts would drastically impact the automated snow-telemetry (SNOTEL) stations which provide "critical information for a myriad of federal, state and local water managers, and other public and private water users," the letter said. The WSWC letter requested that the funding be raised to \$12 million, from the Administration's \$8.9 million request, noting that "recent administrative cuts" are "contrary to what we believe are the express wishes of the Congress." The 700 sites provide almost real-time information that is especially critical given the current drought, Tony Willardson, the Assistant Director of the Western States Water Council, told The Water Report.

For info: WSWC, 801/ 561-5300

ESTUARIES RESTORATION US

NOAA recently announced its initiation of the National Estuaries Restoration Inventory that will track the progress made toward the goals of the Estuary Restoration Act of 2000. The inventory is an online tool to monitor restoration projects implemented around the country and will serve as a searchable source of information on restoration results.

For info: website at <http://restoration.noaa.gov>:

COURT RULING IN MISSOURI RIVER CASE

Judge Paul Magnuson of the US District Court of Minnesota relieved the Corps of the obligation to make any changes in the operations of its six Missouri River dams this summer while ruling on motions for summary judgment. "Because the 2003 Amended BiOp requires that such changes be implemented at the latest by March 1, 2006, the Court finds that there is a reasonable certainty that such flow changes will take effect." Memorandum and Order, page 20, In re: Operation of the Missouri River System Litigation, 03-MD-1555 (PAM), (D. Minn. 2004)

This case involves the interplay of the Corps' obligations under the Flood Control Act of 1944, ESA and NEPA, and a number of issues concerning the new Master Manual and 2004 Annual Operating Plan, reservoir storage levels and endangered species protection (see Hayes/Schneider/Sturkie in TWR #4).

The court found in its Memorandum and Order dated June 21st that "All river interests must be considered and evaluated to 'secure the maximum benefits' to river interests. The Court finds that the FCA does not impose a non-discretionary duty to maintain minimum navigation flows or season lengths. The Corps' prioritization of river interests is discretionary. However, the Corps is not entitled to abandon these interests; it must consider and balance river interests to achieve maximum benefits... The priority that the Corps gives the competing river interests is a discretionary function, and subject to the ESA. If Congress intended to require that the Corps always maintain minimum levels of navigation or a specific navigation season, then Congress must amend the FCA accordingly. Absent any evidence to the contrary, the Court concludes that prioritization of river interests is discretionary." Memorandum and Order at page 7, In re: Operation of the Missouri River System Litigation, 03-MD-1555 (PAM), (D. Minn. 2004). The lengthy opinion contains a detailed discussion of various federal statutes involved and the positions asserted.

Conservation organizations have said they will review the ruling carefully before determining whether to appeal the decision to a higher court. Conservationists had sued the agency seeking measures to improve the survival prospects for three endangered species, improve the river's overall health, and strike a balance among the needs of various river users.

In a related action, the US Army Corps of Engineers (Corps) and US Fish and Wildlife Service (USFWS) announced on June 25th the construction of more than 1,200 acres of shallow water habitat for the endangered pallid sturgeon as recommended by the Service in its 2003 Amended Biological Opinion. In a press release announcing the action, the agencies said that this effort ensures that all authorized purposes will be met this summer, including maintaining minimum flows on the Missouri River without a split navigation season.

The Corps constructed the new fish habitat from Ponca State Park on the Nebraska-South Dakota border to the mouth of the Osage River in central Missouri to comply with the Endangered Species Act. It will provide nursery habitat for the pallid sturgeon and other native fish. In addition, new sandbar habitat using the dredged sand was created for the endangered interior least tern and threatened piping plover. More than 500 dikes were notched and 24 specific sites were constructed to create about 1,400 to 1,800 acres of shallow water habitat for the fish. USFWS determined that the work complies with the 2003 Amended Biological Opinion to make 1,200 acres of new habitat available to the pallid sturgeon, allowing the Corps to modify summer flows. Restoration of shallow water habitat is one element of the recovery program for the Missouri River. These new acres of habitat are the first installment on 2,000 acres to be built by 2005. A total of 20,000 acres is to be built along the entire length of the Missouri River over the next 20 years, according to the Corps. The shallow water habitat report, executive summary, news release and related information are available from Corps' websites: www.nwd.usace.army.mil or: www.usace.army.mil ("Hot Topics")

For info: Paul Johnston (Corps), 402/ 697-2552; Chad Smith, American Rivers, 402/ 423-7930 or website: www.amrivers.org/; Janice Schneider, Latham & Watkins LLP, 202/ 637-2261 or email: janice.schneider@lw.com

**DREDGING LAW SUIT WA/OR
COLUMBIA RIVER / AMENDED CASE**

The US Army Corps of Engineers (Corps) has been added as a defendant to an existing lawsuit as part of an amended complaint filed June 14th. The amended case accuses the Corps of misrepresenting the economic benefits of the project and failing to analyze the environmental harms.

The lawsuit points to numerous flaws in the Corps' balancing of costs and benefits and alleges that the Corps failed to mention deteriorating jetties that stabilize the opening of the channel at the river mouth. Last year, the Corps estimated that rebuilding 20 percent of the jetties would cost between \$140 and \$260 million dollars.

"By omitting the costs of repairing the jetties, the Corps misrepresents the costs of deepening the Columbia River," said Nina Bell, Executive Director of Northwest Environmental Advocates. "If the front door to the river is shut closed, it doesn't matter how deep the river is, there won't be any deep draft shipping."

The lawsuit also says the Corps failed to reveal that decades after the jetties were constructed, a combination of activities are causing severe erosion along the coast of Oregon and Washington, estimated to have cost \$70 to \$100 million over the last ten years. Instead of supplying the coast with sand, the Columbia River is now vacuuming sand from the coast into the estuary, the plaintiffs alleged.

"Federal law requires the Corps to give the public and Congress sufficient information to make good decisions for the federal treasury and the environment. The Corps' hiding the bill for this project and its failure to admit that channel deepening will actually make the problem worse, leaves us no other recourse but the courts," Bell added.

In March, NWEA filed a lawsuit against NOAA Fisheries for its approval, under the Endangered Species Act, of both the channel deepening project and the routine dredging on the Columbia and Willamette Rivers. The amended

The Water Report

WATER BRIEFS

lawsuit challenges the environmental analysis and economic justification prepared by the Corps pursuant to the National Environmental Policy Act, which requires such documentation in Environmental Impact Statements. In both cases, NWEA claims that the agencies have failed to evaluate the projects in light of the historic damage to the estuary.

For info: Nina Bell, NWEA, 503/295-0490; Todd True (Earthjustice), 206/343-7340 x30

INSTREAM FLOW PETITION HI HAWAII WATER CODE & "WASTE"

On June 25th, Earthjustice filed a petition with the State Commission on Water Resource Management on behalf of two community groups, Hui o Na Wai 'Eha and Maui Tomorrow, seeking to restore water to Waihe'e, North & South Waiehu, 'Iao, and Waikapu streams and their tributaries (collectively known as "Na Wai 'Eha"). The four streams, located in the Central Wailuku region of Maui, hold historic and ongoing significance as natural and cultural resources, but continue to be impacted by diversion works operated by former plantation interests, according to Earthjustice. The petition invokes the process set forth in the State Water Code for establishing instream flow standards ("IFS") — which are the minimum amount of water that must flow through a stream to sustain beneficial instream uses such as ecological protection, traditional and customary Native Hawaiian practices, recreation, and scenic values.

The petition demands that the water currently being "wasted" by former plantation interests be immediately returned to the streams of origin. "The Water Commission has a public trust duty under the State Constitution and Water Code to protect the health of our streams," explained Burt Sakata, president of Hui o Na Wai 'Eha. "Our petition urges the State to reconsider its water and land use management policies in a post-plantation economy. The large-scale closing of plantations presents a

historic opportunity for decisionmakers to protect degraded water resources before making new allocations of water," said Earthjustice attorney Kapua Sproat.

"Hawaii's Water Code prohibits waste. If diverted water is no longer being used, then that water should stay in the stream, period. Healthy streams support native ecosystems, near-shore fisheries, groundwater resources, and traditional Hawaiian practices. Our streams are the lifeblood of this 'aina and the law requires that they be treated as such," explained Sproat.

For info: Kapua Sproat, Earthjustice, 808/ 599-2436 x161

FISH FARM WASTEWATER US NEW EPA REGS

On June 30, EPA finalized a new rule establishing regulations for concentrated aquatic animal production (CAAP), or farm raised fish facilities. The regulation will apply to approximately 245 facilities that generate wastewater from their operations and discharge that wastewater directly into waters of the US. This rule is intended to: reduce discharges of conventional pollutants, primarily total suspended solids; and reduce non-conventional pollutants, such as nutrients. The rule also reduces drugs that are used to manage diseased fish, chemicals used to clean net pens, and toxic pollutants (metals and PCBs). The final rule applies to direct discharges of wastewater from existing and new facilities that produce at least 100,000 pounds of fish a year and discharge at least 30 days a year and facilities that produce at least 100,000 pounds of fish a year in net pens or submerged cages. When the rule is fully implemented, discharges of total suspended solids should be reduced by more than 500,000 pounds a year and biochemical oxygen demand and nutrients will be reduced by about 300,000 pounds per year. The CWA directs EPA to review the effluent guidelines and to set schedules for new and revised effluent guidelines. This effects newly permitted facilities, and existing facilities upon renewal of their (CAAP) permits. In January 1992, EPA agreed to a settlement with the Natural

Resources Defense Council (NRDC) and others in a consent decree that established a schedule by which EPA would consider regulations for 19 industrial categories. EPA selected the (CAAP) industry for one of those rules. Issuance of this rule completes all regulations addressed under the settlement agreement.

For info: Cathy Milbourn, EPA, 202/564-7824

or email: milbourn.cathy@epa.gov
EPA WEBSITE: www.epa.gov/guide/aquaculture

CONTAINMENT LINERS US EPA TECH SURVEY

A Report published by the EPA Office Superfund Remediation and Technology Innovation — "Survey of Technologies for Monitoring Containment Liners and Covers" (EPA 542-R-04-013) — provides information on innovative long-term monitoring technologies to detect contaminant releases beneath a liner containment system and identify potential problems with the integrity of final containment covers. The Report summarizes available information on these technologies and provides examples of where the technology has been used (June 2004, 64 pages).

For info: View or download at <http://clu-in.org/techpubs.htm>

CONTAMINANT DATA US

The issue paper — "Fingerprint Analysis of Contaminant Data: A Forensic Tool for Evaluating Environmental Contamination" (EPA 600-5-04-054) — was produced through EPA's Technical Support Center. It describes a tool to identify detection monitoring parameters for specific industries. The Fingerprint Analysis of Leachate Contaminants (FALCON), was developed in response to the need for identifying the source of contaminant plumes. The objective of this paper is to demonstrate that FALCON is a quantitative, defensible fingerprinting process (May 2004, 27 pages).

For info: EPA website: www.epa.gov/tio/tsp/issue.htm

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 15-16 NM
Energy in the Southwest Conference, Santa Fe, Eldorado Hotel, Includes FERC Commissioner Suedeen Kelly and Distinguished Faculty of Energy Executives, Tribal and Commission Representatives, Attorneys and Consultants. Evolving Technologies, Policies and Practices are shaping the energy sector of the future. For info: Law Seminars International, 800-854-8009 or website: www.clenews.com/LSI/04/04resnm.htm

July 17 OR
US House Resources Committee Meeting, "The Endangered Species Act 30 Years Later: The Klamath Project"—Klamath Falls, 9 am-11:30 am, Ross Ragland Theater, RE: ESA Impacts on the Klamath Reclamation Project, What's Working & What's Not, Potential Reform, HR 1662. For info: Brian Kennedy, 202/ 226-9019 or Dan Keppen, Klamath Basin Water User's Association, 541/ 883-6100 or email: dkeppen@cvcwireless.net

July 18-23 WA
25th International Conference of the Society of Wetlands Scientists, Seattle, Keynote Speakers Include: Dr. David Goode of the Greater London Authority and Dr. Mark Sudol, Chief of the US Army Corps of Engineers Regulatory Program. 25 Technical Sessions, Eight Symposia, over 20 Field Trips and 15 Workshops. Fisheries, Wildlife, Policy/Regulation, Education (all-ages), Cultural Uses, Botany, Landscape Science, Global Wetlands and Communities, More. For info: website: www.sws.org/seattle2004

July 19-22 DC
National Environmental Monitoring Conference, Washington, DC, RE: Monitoring All Environmental Media Across All Environmental Programs. Organized by US EPA and ACIL's Independent Laboratories Institute, jointly with Instant Reference Sources, Inc. For info: Internet site: <http://www.nemc.us>

July 20 OR
Drinking Water Advisory Committee Meeting, Salem, Public Utility Commission Office, 550 Capitol St NE, 2nd Fl Conf Rm, 10am. SWDA Implementation Tasks. For info: Diane Weis, OHD Drinking Water Div, 503/ 731-4010 or email: diane.weis@state.or.us

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/>

July 20-22 OR
"Allocating Water: Economics and Environment", 2004 UCOWR Annual Conference, Portland, Marriott Downtown, 1401 Naito Parkway, RE: Water Resources Management, Impacts, Risk and Prices of Irrigation, Economic and Environmental Demands, Climate Change, Cooperative Solutions, Water Rights Markets, Water Allocation Legal Issues & ESA, Groundwater Resources and Integrated Management, Columbia River Treaty, Conservation, Development Trends, Water Utility Supply and Demand Planning, Water Transaction Strategies, Tradeoffs in Quality & Quantity, Fed Intervention, Sustainability. Sponsored by Universities Council on Water Resources and The National Institutes for Water Resources. For info: Renee Mantei, 703/ 684-2473 or email: rmantei@wef.org or website: www.ucowr.siu.edu

July 22 WA
Columbia River Initiative Briefing, Kennewick, Red Lion-Columbia Center, 3pm-5pm, CSRIA BarBQ/Social at 6pm, RE: History of CRI, Stakeholder Perspectives, Ecology's Draft Rule and Columbia-Snake River Irrigators Association's (CSRIA) proposed draft rule. For info: CSRIA, Darryl Olsen, 509/ 783-1623, or Tom Mackay, 509/ 783-1623

July 22 CA
State Water Resources Control Board (Cal EPA), Sacramento, 1001 I Street (Coastal Hearing Room), 10am. For info: Debbie Irvin, Clerk, 916/ 341-5600, email: dirvin@swrcb.ca.gov, website: www.swrcb.ca.gov/wksmtgs/schedule.html

July 22-24 CO
50th Annual Rocky Mountain Mineral Law Institute, Vail, Vail Marriott, Water and Environmental Section on 7/24, For info: Rocky Mountain Mineral Law Foundation, 303/ 321-8100, website: www.rmmlf.org

July 28-29 CO
29th Colorado Water Workshop, "Science, Technology, and the Politics of Water in the West", Gunnison, Western State College of Colorado. For info: George Sibley, 970/ 943-2055, email: water@western.edu, website: www.western.edu/water

July 28-30 CO
29th Colorado Water Workshop, Gunnison, Western State College, "Science, Technology & the Changing Politics of Water in the West" For info: WSC, 970/ 943-2055 or website: www.western.edu/water

July 30 CA
Wetlands Regulation & Mitigation, Sacramento, UC Davis Extension. For info: UCDE, 800-752-0881

July 28-31 NM
Western Water Seminar, Santa Ana Pueblo, Hyatt Regency Tamaya, Sponsor: National Water Resources Association. For info: Kris Polly, 703/ 524-1544, email: kpolly@nwra.org, website: www.nwra.org

August 10 NM
2004 New Mexico Water Research Symposium, Socorro, Macey Center, New Mexico Tech, 8 pm. For info: Cathy Ortega Klett, 505/ 646-1195; email: coklett@wrri.nmsu.edu

August 10-12 MT
Northwest Power and Conservation Council Meeting, Location TBA. For info: NPPC, 800/ 452-5161, email: info@nwcouncil.org, website: www.nwppc.org/

August 12-13 AZ
Arizona Water Law, Scottsdale, Marriott Mountain Shadows Resort & Golf Club, Sponsored by CLE International. For info: CLE Int'l, 303/ 377-6600, or toll-free 800/ 873-7130, email: registrar@cle.com, website: www.cle.com

August 16-17 NM
New Mexico Water Law 12th Annual SuperConference, "Law, Policy and Beyond," Santa Fe, La Fonda on the Plaza, RE: Hydrology, Adjudications, Natural Resource Damage Claims, Economics of Water, Clean Water Act, Proposed Navajo Settlement, Transfers, Acequias and More, Sponsored by the Water Law Institute (CLE Int'l). For info: CLE International, 800/ 873-7130, email: registrar@cle.com, website: www.cle.com

August 19 TX
Partnerships for Water Infrastructure, Austin, Renaissance Austin Hotel, 9721 Arboretum Blvd., 8am-5pm, RE: Water and Wastewater Infrastructure Needs, Methods for Mobilizing Resources and Meeting Challenges. For info: The National Council for Public-Private Partnerships, 202.467.6800, website: ncppp@ncppp.org

August 20 CO
Colorado Ground Water Commission Meeting, Location TBD. For info: Marta Ahrens, 303/ 866-3581, email: marta.ahrens@state.co.us, website: <http://water.state.co.us/cgwc/>

August 26 CA
State Water Resources Control Board (Cal EPA), Sacramento, 1001 I Street (Coastal Hearing Room), 10am. For info: Debbie Irvin, Clerk, 916/ 341-5600, email: dirvin@swrcb.ca.gov, website: www.swrcb.ca.gov/wksmtgs/schedule.html

August 26-27 CO
Colorado Water Congress Summer Convention, Snowmass Village. For info: Richard MacRavey, 303/ 837-0812, email: macravey@cowatercongress.org, website: www.cowatercongress.org/

(continued from previous page)

August 26-27 CA
California Fish & Game Commission, Morro Bay, Veterans Memorial Building, 209 Surf Street, 10 am, RE: Coho Listing & More. For info: CFGC, 916/653-4899, website: www.dfg.ca.gov/fg_comm/2004/2004mtgs.html

August 30-31 CA
Dam Removal: Lessons Learned, Berkeley, University of California, RE: The Environmental & Water Resources Institute (EWRI) of the American Society of Civil Engineers (ASCE), Dam Removal Projects and What Can Be Learned, Permitting; Economic Impacts; Biological Impacts; Social/Cultural Impacts; Aesthetics/Recreation; and Geomorphologic/Hydrologic Impacts. For info: EWRI website: www.ewrinstitute.org/damremoval04,

September 7-9 WA
Northwest Power and Conservation Council Meeting, Seattle. For info: NPPC, 800/452-5161 or website: www.nwppc.org/

September 9-10 OR
Environmental Quality Commission Meeting, Location/Agenda TBA For info: Mikel O'Mealy, 800/452-4011, email: deq.info@deq.state.or.us

September 12-15 WA
Second National Conference on Coastal and Estuarine Habitat Restoration, Seattle, Washington State Convention & Trade Center, RE: Coastal and Estuarine Habitat Restoration. For info: Nicole Maylett, 703/524-0248, email: nmaylett@estuaries.org, website: www.estuaries.org

September 12-17 CA
Pacific Fisheries Management Council Meeting, San Diego, Hyatt Regency Islandia, For info: For info: Kerry Aden, 866/806-7204; email: Kerry.Aden@noaa.gov, website: www.pcouncil.org

September 13-14 TX
Texas Water Law 14th Annual Conference, Austin, Marriot at the Capitol, Sponsored by CLE International. For info: CLE Int'l, 303/377-6600, or toll-free 800/873-7130, email: registrar@cle.com, website: www.cle.com

September 13-14 CO
Western Water Law 11th Annual Conference, Denver, Hyatt Regency Hotel, Sponsored by CLE International. For info: CLE Int'l, 303/377-6600, or toll-free 800/873-7130, email: registrar@cle.com, website: www.cle.com

September 14-15 CO
Colorado Water Conservation Board Meeting, Alamosa, Location TBA, For info: email: cwcbnews@state.co.us, website: <http://cwcb.state.co.us/>

September 16-17 CO
Natural Resources and Environmental Administrative Law & Procedure Conference, Denver. For info: Rocky Mountain Mineral Law Foundation, 303/321-8100, website: www.rmmlf.org

September 20-21 CO
Colorado Water Congress Water Law Seminar, Denver, CWC Conference Room, 1580 Logan Street, Suite 400, RE: History of Colorado Water Law, Water Distribution Organizations, Water Court System and Procedure, Impact on Colorado of Interstate Compacts, Relationship Between the Federal Government and Colorado Water Law, Colorado Ground Water Law, Water Conservancy Districts, Engineering Aspects of Water Rights, Power Development Authority. Colorado Water Conservation Board, Denver Water System, Western Colorado Water Projects, Federal & State Water Quality Laws, Ethics and Water Law. For info: www.cowatercongress.org/

September 20-21 AZ
Environmental & Natural Resources Law on the Reservation 8th Annual Conference, Phoenix, Hilton Phoenix East, Sponsored by CLE International. For info: CLE Int'l, 303/377-6600, or toll-free 800/873-7130, email: registrar@cle.com, website: www.cle.com

September 21-22 NM
49th Annual Water Conference, Ruidoso, New Mexico Water Resources Research Institute. For info: Cathy Ortega Klett, 505/646-1195; email: coklett@wrri.nmsu.edu, website: <http://wrri.nmsu.edu/>

September 22-23 CA
Continuing Legal Education for Water Attorneys, Association of California Water Agencies, South Lake Tahoe, Harrah's, RE: Latest Information on Hottest Legal Issues Facing California's Water Community. ACWA is State Bar of California approved MCLE provider. For info: Ellie Meek, 888/666-2292, email: elliem@acwanet.com; internet: <http://acwanet.com/events/04>

September 23-24 OR
Oregon Wetlands Conference, Portland, 5th Avenue Suites Hotel, 9am Both Days. For Attorneys, Government Officials, Developers, Consultants & Engineers, and Environmental Professionals. RE: Perspectives from the Oregon Division of State Lands; US Army Corps; Wetland Identification and Valuation; Isolated, Artificial & Agricultural Wetlands; Enforcement; and the Role of Interest Groups. More. For info: The Seminar Group, 800-574-4852 or website: www.cvent.com/s.asp?code=vyblici9piybtcrbinbdipbbnd890

September 26-29 AZ
Dam Safety 2004, ASDSO's 21st Annual Conference, Association of State Dam Safety Officials, Phoenix, Pointe South Mountain Resort, RE: Dam Failures/Incidents, Hydrology&Hydraulics, Emergency Preparedness, Security, Dam Owner Issues, Safety Regulatory Programs, Inspections, Construction, Rehabilitation and Design. For info: <http://www.damsafety.org>.



260 N. Polk Street • Eugene, OR 97402

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