The Water Report™
Water Rights, Water Quality & Water Solutions in the West

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TRIBAL WATER QUALITY STANDARDS

by Richard A. Du Bey & Michelle Ulick Rosenthal
Short Cressman & Burgess PLLC (Seattle, WA)

INTRODUCTION

From time immemorial, the physical and natural environment has played a vital role in the spiritual and cultural well being of Native Americans. Thousands of lakes, streams, and river basins are found on the millions of acres that comprise Indian country. The air, surface waters, wetlands and groundwater therein provide Indian Tribes with fishery and other wildlife resources that often comprise a significant portion of the diet of tribal members. Those resources also support tribal lifestyles and the economic and spiritual well-being of tribal members.

Because of their sovereign status, tribes possess the inherent authority to regulate activities affecting human health and the quality of the air, lands, waters, and natural resources that lie within the boundaries of the reservation (the Reservation Environment). Many tribes have protected and reserved rights and entitlements to hunt, fish, and gather food beyond the boundaries of their Reservation land.

Tribal resources, such as groundwater and surface water, do not respect reservation boundaries, and as a result, they are particularly susceptible to contamination from off-reservation sources. The ability of tribes to protect these rights, entitlements, and natural resources as integral components of their cultural and spiritual well-being derive from several sources, including treaties, federal laws and statutes, and the common law. Not surprisingly, intergovernmental conflicts have arisen between tribes and states over control and regulation of these important resources, especially when the resource in question is water.

TRIBAL CIVIL REGULATORY AUTHORITY

Three primary sources serve as the foundation for tribal civil regulatory authority. First, as governments recognized by the federal government, tribes possess retained or inherent sovereignty over their land. Second, tribes have powers expressly conferred on tribes by Congress through federal treaty or statute. Third, under Federal environmental laws, Congress has specifically provided for tribal assumption of regulatory responsibility for program implementation and enforcement on all lands and waters within the exterior boundaries of Indian reservations.

Tribal Sovereignty

Tribal sovereignty is the primary source of regulatory jurisdiction that tribes can exercise over all trust and fee lands and all persons who either reside or do business within the exterior boundaries of the reservation (Reservation Population). As separate, sovereign nations, Tribes occupy a distinctive political and legal status and possess the inherent authority to regulate activities that either affect or may affect the health of the Reservation Population or the quality of the Reservation Environment.

Although tribal nations possess "attributes of sovereignty over both their members and their territory," the US Supreme Court has repeatedly ruled that Congress retains plenary (broad) power over tribes. As a consequence, Indian Tribes exist as dependent

Tribal WQ

Tribal Lands

Regulatory Jurisdiction

On- & Off-Reservation

Treaty Authority

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wards subject to the sovereign guardianship of the Federal government. This dependent status of tribal governments generally precludes the unilateral extension of tribal civil authority beyond reservation boundaries. Although there are exceptions to this general rule, this article will discuss the role of tribes as regulatory bodies within the Reservation Environment.

Tribal Jurisdiction over Reservation Lands

The Federal government holds significant portions of on-reservation lands, whether by treaty, executive order, or statute, in trust for the Tribes. As such, Indian Tribes do not normally own the lands set aside for Indian reservations in fee simple (absolute ownership), which is freely alienable (transferable to the ownership of another) under US property law. Under the typical trust arrangement, the Federal government holds legal title over these lands in trust for the benefit of Indians. Lands located within the exterior boundaries of a reservation that are not held in trust by the Federal government, however, may be owned in fee simple by both Indians and non-Indians.

Under the "tribal interest test" set forth in *Montana v. United States,* 450 U.S. 544 (1981), tribes may exercise their inherent sovereign power to exercise tribal regulatory jurisdiction over non-Indians and non-Indian fee land in two particular situations: (1) when a non-Indian enters into a consensual relationship with a tribe or tribal member through commercial dealing, contracts, leases, or other arrangements; or (2) when the conduct of the non-Indian "threatens or has some direct effect on the political integrity, the economic security, or the health or welfare of the tribe." As a result of the exceptions outlined in *Montana*, tribes may assert their environmental regulatory authority over all members of the Reservation Population and over all lands and waters that comprise the Reservation Environment.

Tribal Environmental Protection

The environmental concerns of Indian Tribes may extend beyond the boundaries of their reservations. Such concerns may be the result of environmental problems occurring off-reservation that may visit adverse environmental consequences on-reservation, or may be the consequence of environmental hazards that begin within the reservation's territorial limits. Whether on- or off-reservation, tribes must play a central role in decisions related to their environment to ensure protection of their rights and natural resource interests.

Important sources of authority by which tribes may assert their on- and off-reservation natural resource interests are treaties entered into by tribes and the United States. Many such treaties specifically reserve the rights of tribes to their lands, waters, and natural resources. Additionally, many Federal environmental laws include provisions that permit tribal governments to assume regulatory responsibility for program implementation within the exterior boundaries of their reservations (see below).

The Federal Government's Responsibility to Tribes

Complementing tribes' civil regulatory authority is the US Government's obligation and responsibility as a Trustee to protect or enhance tribal assets, whether they be natural, cultural, human or economic. This trust obligation derives not only from specific treaties, statutes, and agreements, but from what is known as the "responsibility doctrine." A principle component of the Federal government's duty under this doctrine is to strengthen the United States' government-to-government relationship with Indian Tribes by engaging in regular and meaningful consultation and collaboration with tribal officials in the formulation and development of Federal policies that may have tribal implications.

TRIBAL REGULATION OF WATER QUALITY UNDER THE CLEAN WATER ACT

The Clean Water Act (CWA) 33 U.S.C. ßß 1251, et. seq. is the principle federal statute regulating the nation's water pollution. Congress' primary goal in passing the CWA was to "restore and maintain the chemical, physical, and biological integrity of the Nation's water," and where possible, "to achiev[e] water quality that promotes the protection of fish and provides recreation." Originally, this goal was to have been achieved 20 years ago, in 1985. The program, however, is still far from achieving this goal, now some 33 years since the modern CWA was passed in 1972.

The foundation for water quality protection under the CWA is the creation of ambient **w**ater **q**uality **s**tandards (WQS) under section 303 that are designed to protect designated uses and provide the basis for enforcing pollution control measures. To this end, WQS generally consist of four elements: (1) a defined *designated use* of the water body at issue (e.g., drinking water source, recreation, agriculture, aquatic life); (2) qualitative or quantitative *water quality criteria* to protect the water body's designated use; (3) an *anti-degradation policy* to preserve and protect existing uses and ensure that waters with higher water quality are not degraded; and (4) *general policies* that address site-specific implementation issues (e.g., variable water flows).

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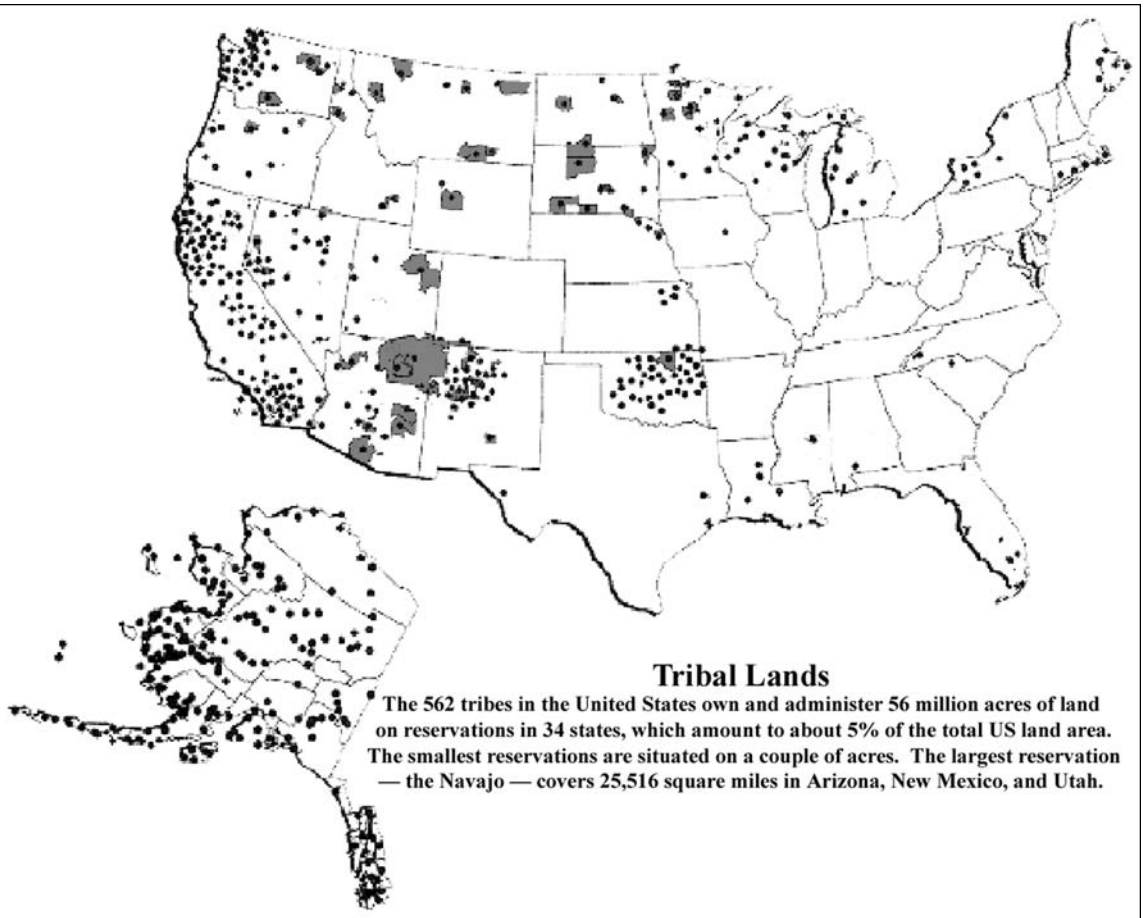

Tribal Lands

The 562 tribes in the United States own and administer 56 million acres of land on reservations in 34 states, which amount to about 5% of the total US land area. The smallest reservations are situated on a couple of acres. The largest reservation — the Navajo — covers 25,516 square miles in Arizona, New Mexico, and Utah.

Tribal WQ

CWA Authority

"TAS" Criteria

EPA Duty

Treatment as a State (TAS) Designations

Until the late 1980s, only state agencies with delegated authority had the power to establish WQS within the states. Where states failed to propose acceptable WQS to the US Environmental Protection Agency (EPA), the federal agency would step in and impose national standards on the state's water bodies. Participation by tribal governments in the development and implementation of such standards was limited mostly to commenting on proposed rules. As a result, waters located in Indian Country often were less protected than they otherwise might have been.

In 1987, however, Congress amended the CWA and put Indian Tribes on equal footing with states by reaffirming the sovereign authority of tribes to regulate pollution sources affecting the Reservation Environment. In enacting section 518 of the CWA, Congress authorized EPA to treat qualifying tribes as states for several CWA programs, and directed EPA to promulgate regulations specifying how the EPA would treat qualified Indian tribes "as states" for the purpose of delegating those CWA programs. Congress also required EPA to establish a mechanism for resolving any unreasonable consequences that might arise as a result of differing WQS set by a tribe and a state for common water bodies.

With the addition of section 518, tribes now have the ability to build the capacity necessary to enable them to participate effectively in the management of environmental programs. Pursuant to section 518, EPA has promulgated rules setting forth criteria by which EPA determines whether a tribe qualifies for "Treatment as a State" (TAS) for various CWA programs. To obtain a TAS designation from EPA, a tribe must satisfy four statutory and regulatory requirements. First, the tribe must be federally recognized by the Secretary of Interior. Second, a tribe must have a governing body capable of carrying out substantial governmental duties and functions. Third, the functions of the tribal government must include management and protection of water resources. Finally, the tribe must be judged to be reasonably capable of carrying out the functions of an effective CWA program.

Tribal Water Quality Standards for the Reservation Environment

CWA Section 303 imposes upon EPA a mandatory duty to formulate or oversee the formulation of WQS for waters of the US. The broad scope of EPA's congressional mandate extends to surface waters and wetlands within the exterior boundaries of Indian Reservations. Thus, EPA has a nondiscretionary duty to promulgate or to oversee the promulgation of WQS for Reservation Environments.

Tribal WQ

State Control Excluded

If EPA chooses not to promulgate standards specific to Reservation Environments, it *cannot* delegate that responsibility to states; tribes' inherent sovereign authority to regulate conduct that directly impacts the welfare of its membership excludes state regulation. A tribe's health and welfare, including its economic security, is directly and critically linked to the quality of the Reservation Environment. Like other federal environmental statutes, the CWA reflects the continuing federal acknowledgment of that sovereignty by policies that support tribal self-government in environmental matters. Thus, absent some distinct source of jurisdiction, the CWA does not authorize states to promulgate WQS for, or apply existing state standards to, Indian lands.

Designating Uses of Reservation Waters

Water Bodies

The first step toward tribal promulgation of WQS is for tribes to identify all waters within the Reservation Environment that require standards. Such waters include all surface waters and may include hydrologically connected groundwater within the exterior boundaries of the Reservation. In appropriate circumstances, tribes may determine that certain artificially created waters, like irrigation canals or ditches, warrant protection through the development and implementation of WQS.

Protected Uses

Once reservation waters have been identified, tribes then develop surface water "use classification systems" for the purposes of assigning specific "uses" to those waters for which tribal WQS will be developed. The CWA requires that, at a minimum, the tribe must protect recreational uses in and on the water, and uses by fish, shellfish, and wildlife for protection and propagation. Tribes retain their discretion to adopt other use categories and subcategories appropriate to their reservations, so long as those uses and associated water quality criteria are consistent with the purposes of the Act. Uses likely to be protected would include: public drinking water supplies; irrigated agriculture; recreational activities; power generation; industrial and commercial activities; and cultural or religious activities. Where uses are only practical during specific seasons, a tribe may develop means to protect the CWA's fishable/swimmable goals on a seasonal basis.

WQS Choices

A tribe's choice of uses is an important step in the process of protecting the quality of the Reservation Environment. Tribal WQS must consider downstream off-reservation WQS established by the state and other tribes. The standards adopted by a tribe for reservation waters must provide for and not interfere with the attainment and maintenance of the downstream WQS. Although tribes may adopt WQS more stringent than necessary to meet the minimum fishable/swimmable goals, once adopted, a tribe may only downgrade use by showing that attaining the use is not feasible.

Use Attainability

EPA's guidance for the development of tribal WQS provides that tribes must conduct "use attainability analyses" for any designated use that does not include fishable/swimmable uses. This use attainability analysis is a scientific assessment of the physical, chemical, biological, and economic factors affecting use attainment, and consists of: (1) a survey and assessment of the relevant water body; (2) a wasteload allocation; and, if appropriate, (3) an economic analysis. Those analyses can prove useful in assisting tribes in determining which uses of reservation waters are possible, and the relative need to implement environmental controls to protect the uses from the adverse consequences of existing and future point and non-point sources.

Establishing Water Quality Criteria

Following use classification, tribes would next adopt water quality criteria designed to protect the designated uses. Water quality criteria are specific limits on particular pollutants or on the condition of a water body. Compliance with properly selected criteria is expected to achieve a degree of water quality sufficient to protect designated uses.

304(a) Criteria

The CWA allows tribes to adopt EPA's section 304(a) criteria, modify that criteria to reflect site specific conditions, or adopt any other method based on sound science. Consistent with the Act's fishable/swimmable goals, EPA's section 304(a) criteria focus on the effects of pollutants on aquatic life and human health. Using EPA's criteria offers tribes two types of useful information: (1) scientific data on the effects of pollutants on aquatic life, human health, and/or recreation; and (2) the specific chemical concentration in water that should achieve adequate water quality to support designated uses. Because tribes are required to designate fishable/swimmable uses, they must adopt aquatic life and human health criteria for any pollutants which data shows may interfere with attaining the designated uses.

Narrative Criteria

Effective tribal criteria are likely to contain both narrative and numeric water quality criteria. Narrative criteria are statements of acceptable pollutant concentrations without reference to defined units or requirements. A common example of a narrative statement is the provision that toxic material concentrations in surface waters shall be below those which "may adversely affect characteristic water uses." Narrative criteria are often used where numeric criterion for a specific chemical is not available or where the chemicals in a toxic effluent cannot be identified. When a tribe adopts narrative criteria for toxic pollutants, however, it must show EPA how the tribe will use the criteria to regulate point sources.

Tribal WQ

Numeric Criteria

Compared to narrative standards, numeric criteria are more easily understood and enforced. These criteria establish specific chemical concentrations in water of various pollutants. For example, the fishable/swimmable goals requires tribes to adopt numeric criteria for dissolved oxygen and ammonia, as well as toxic pollutants like lead, mercury, and polychlorinated biphenols ("PCBs") to protect aquatic life and human health. In addition, tribes must adopt numeric criteria for certain toxic pollutants where the discharge of those pollutants may adversely affect designated uses.

Anti-Degradation

Adopting an Anti-degradation Policy

Apart from either narrative or numeric water quality, each tribe delegated authority under section 303 must adopt an anti-degradation policy. Such a policy seeks to maintain existing levels of water quality and proscribes any significant reduction in such water quality where reduction threatens existing uses. The policy should be reservation-wide, with implementation methods intended to preserve existing uses and high quality waters. Whenever a discharge is found to eliminate a use or lower the quality of high quality waters, the tribe must conduct an anti-degradation policy review to ensure that actions taken are consistent with CWA's goals.

"Standards Package"

The EPA Approval Process

A tribe's application to EPA for delegation of section 303 authority is referred to as a "standards package." The package includes all relevant material upon which the EPA Regional Administrator will approve or disapprove delegation to the tribe. Thus, tribes should carefully assess their standard packages to ensure responsiveness to EPA's requirements. Notwithstanding a tribe's own procedure for adopting rules like WQS, EPA requires that, prior to such adoption, the tribe hold a public meeting to review the proposed WQS, which must be run in accordance with both tribal law and certain federal regulations. The meeting should be open to all persons affected by standards decisions, including nonmembers, non-Indians, and state representatives. Prior to the meeting, the tribe must make available to the public proposed WQS and supporting scientific analyses.

Public Meeting

The rationale underlying the conduct of a public meeting is simple: public input may reveal shortcomings in the proposed standards that necessitate changes. Once finalized, the tribe adopts or enacts the standards according to tribal law. The tribal attorney then certifies that the standards were adopted consistent with tribal law.

EPA Review

Because tribes are treated as states for purposes of section 303 delegation, EPA reviews tribal WQS under the same statutory and regulatory requirements it uses to review state standards. Fundamentally, EPA considers whether the proposed tribal standards are consistent with the CWA and EPA's regulations. EPA also assesses whether the scientific analyses performed to establish the tribe's WQS were adequate. For example, a tribe's submittal to EPA would need to include: (1) use designations consistent with sections 101(a)(2) and 303(c)(2) of the CWA; (2) water quality criteria sufficient to protect the designated uses; (3) scientifically defensible methods and analyses used to establish the WQS; (4) an anti-degradation policy and implementation methods that are consistent with EPA's regulation; (5) certification by the tribal attorney that the WQS were adopted in accordance with tribal law; and (6) scientifically defensible information regarding the bases for standards that do not include minimum fishable/swimmable uses.

Extraterritorial Impacts

Equally important to EPA, however, is whether the tribe's designated uses and criteria are compatible throughout the water body, and whether existing downstream WQS are protected. EPA's regulations attempt to address and resolve potential extraterritorial effects of water quality standards during the review process. Once a tribe adopts WQS in accordance with EPA's regulation, upstream jurisdictions will be required, when adopting or revising their standards, to provide for attainment and maintenance of the tribe's standards. Likewise, when revising its standards, the tribe must ensure that downstream uses are protected.

Approval

If the Regional Administrator finds the tribal standards in compliance with the Act and EPA's water quality regulations, then the Administration approves the standards by letter to the tribal chairperson. If the Administrator disapproves, then the letter explains why the standards are inconsistent with the Act and describes how the tribe can revise the standards for full approval. Alternatively, the Administrator may approve the standards conditionally so long as the tribe agrees to complete any minor revisions required by the Administration within a specified time.

Stringency Options

The Extraterritorial Effects of Tribal Water Quality Standards

As noted above, tribal WQS must consider downstream standards established by other tribes and the state, and must provide for and not interfere with the attainment and maintenance of those standards. At the same time, tribes retain their inherent sovereign authority to establish standards that are more stringent than either state of federal requirements, which in turn endows tribes with certain procedural and substantive rights.

Tribal WQ

Upstream Compliance

Enforcement Authority

Comprehensive Authority

Federal WQS Proposal

Rulemaking Notice

Tribal WQS

The most notable of these rights is the ability of tribes to require upstream dischargers, including state and local governments, to comply with a tribe's downstream standards. This aspect of tribal power has been upheld by several courts. Two examples of a tribe's assertion of extraterritorial jurisdiction through its water quality program are discussed below.

In *City of Albuquerque v. Browner,* 97 F.3d 415 (10th Cir. 1996), cert. denied, 522 U.S. 965 (1997) the Isleta Pueblo (a regional tribe) promulgated WQS that were more stringent than Federal WQS for arsenic. The City of Albuquerque, New Mexico, which was located five miles upstream from the tribe on the Rio Grande, sued EPA for granting TAS status to the tribe to administer the stricter standards. The Tenth Circuit ruled in favor of the tribe and held that the Isleta Pueblo had the legal authority to enforce its tribal WQS. This decision was important because it preserved the tribe's inherent authority of self-governance, and clearly established that tribes with TAS designations would be treated the same as states.

In 2002, the Seventh Circuit reached a similar decision in *Wisconsin v. EPA,* 266 F.3d 741 (2001), cert. denied, 535 U.S. 1121 (2002). In that case, the State of Wisconsin sued EPA for granting TAS status to the Mole Lake Band of Chippewa Indians, and argued that it owned the lakebeds located on reservation lands. In upholding the lower court decision, the court held that the Band had the right to govern its water resources within the comprehensive framework of the CWA, and reaffirmed the Band's authority to regulate water quality within the boundaries of the reservation, despite the fact that the land under the water was not Indian-owned land. Taken together, these two decisions confirm the authority delegated by EPA to tribes with TAS designations to comprehensively regulate water quality within the Reservation Environment and to protect the integrity of tribal standards against upstream sources.

Recent Developments Regarding Tribal Water Quality Standards

Despite the ability of tribes to apply for TAS status and to exercise their civil regulatory authority by establishing reservation-specific WQS, only 25 tribes nationally currently have such standards in place under the CWA. Unfortunately, EPA does not anticipate that the number of tribes with agency-approved WQS will appreciably increase in the near future. As a result, the vast majority of tribal waters in the United States are not receiving the full extent of the water quality protections available under the CWA.

In an effort to close the gap in water quality protection that exists in Indian Country, EPA began pursuing the concept of promulgating Federal WQS. Between 1998 and 2000, EPA consulted with more than 235 tribal representatives and EPA's Tribal Caucus regarding the concept of promulgating Federal standards as a means to protect waters in Indian Country that currently lack EPA-approved WQS under the CWA. On January 19, 2001, EPA Director Carol Browner signed a proposed rule to establish "core" Federal standards that would be applicable to all of Indian Country unless a tribe chose to "opt out" by developing reservation-specific WQS, either on its own or in collaboration with EPA. Two days later, however, with the change in administrations, EPA withdrew the proposal so that the new EPA Director, Christine Todd Whitman, could review it.

EPA has since decided to engage in further discussion with tribes and states and to seek additional comment from the public regarding possible approaches for promulgating WQS in Indian Country. To that end, EPA intends to issue an Advance Notice of Proposed Rulemaking (ANPRM). An ANPRM is a pre-rulemaking action designed to generate national debate, the general intent of which is to determine whether a Federal agency should proceed with rulemaking. The public will likely have at least 180 days to provide comments to EPA once the agency publishes the ANPRM, which it has not done to date.

CONCLUSION

To Native Americans, reservation lands are the glue that bind tribal communities together. The quality of the Reservation Environment – including the need for clean water – is of critical importance to tribes' physical, cultural, economic and spiritual survival. Consequently, impaired water quality can adversely impact not only the Reservation Environment, but the health of the Reservation Population as well as the health of adjacent communities.

EPA continues to work with Indian tribes on a government-to-government basis to establish and implement tribal WQS. Where tribes have not developed their own standards, EPA is working collaboratively with tribes to develop federal standards that will ensure the protection of tribal health and welfare. Tribes, however, need not wait for EPA or until they have a complete TAS Program; rather, tribes are free to develop their own laws as necessary to protect tribal interests, while building the capacity to have a fully operational program. Tribes may also work with adjacent jurisdictions to develop joint programs to address needed water quality management matters, which may or may not involve EPA.

In short, tribes are not going anywhere and no community cares more about tribal interests than tribes protecting their land base and way of life for current and future generations. Furthermore, the need to protect the Reservation Environment will be challenged by the ever increasing competing demands for

Tribal WQ

Opportunity

scarce tribal water resources. Consequently, tribal governments must be consistently vigilant in protecting both the quality and the quantity of their life-giving water resources. In protecting their interests, tribes may have the opportunity to work together with other tribes, states, local governments and federal agencies to further the goals of the CWA and other Federal laws and policies designed to protect the health and welfare of all who either reside or do business on Indian reservations. Tribal governments need to rise to this challenge and take their rightful place as one of the three sovereigns recognized under the CWA and the US Constitution.

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Tribal Water Quality Standards

Four Primary Elements: Designated Use • Water Quality Criteria • Anti-Degradation Policy • General Policies

Tribes with Water Quality Standards Approved by EPA (by Region)

Region 4
Seminole of Florida • Miccosukee Tribe of Indians of Florida

Region 5
Mole Lake Band of the Lake Superior Tribe of the Chippewa Indians, Sokaogon Chippewa Community
The Fond du Lac Band of the Minnesota Chippewa Tribe

Region 6
Pueblo of Acoma • Pueblo of Isleta • Pueblo of Nambe • Pueblo of Picuris • Pueblo of Pojoaque
Pueblo of Sandia • Pueblo of San Juan • Pueblo of Santa Clara • Pueblo of Tesuque

Region 8
Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation

Region 9
White Mountain Apache • Hoopa Valley Tribe • Hualapai Tribe

Region 10
Kalispel Indian Community of the Kalispel Reservation • Spokane Tribe of Indians • Puyallup Tribe of Indians
Confederated Tribes of the Chehalis Reservation • Confederated Tribes of the Colville Reservation
Confederated Tribes of the Umatilla Indian Reservation of Oregon
Confederated Tribes of the Warm Springs Indian Reservation of Oregon

Source: U.S. EPA, http://www.epa.gov/waterscience/standards/wqslibrary/tribes.html, last updated January 13, 2005.

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Stormwater

Impaired Water Quality

TMDLs

Constructed Wetlands

Urban Retrofit

Land Use

SAN DIEGO CREEK'S NATURAL TREATMENT STORMWATER MANAGEMENT SYSTEM

SAN DIEGO CREEK MASTER PLAN

by Eric Strecker, Peter Mangarella, Todd Hesse, Klaus Rathfelder & Marc Leisenring (Engineers with GeoSyntec Consultants) & Norris Brandt, Irvine Ranch Water District, Irvine, CA

Introduction

San Diego Creek and Newport Bay in Orange County, California have been identified as having impaired surface water quality under California state and US Environmental Protection Agency (EPA) regulations. The creek and the bay receive runoff from storm events and from agricultural and urban activities in the San Diego Creek Watershed, in addition to natural flows. Federal regulations for impaired water bodies require the establishment of and compliance with discharge limits for the pollutants that are determined to be causing the impairments. These limits are called total maximum daily loads (TMDLs), and are linked to discharge permits established under the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act.

Orange County and NPDES co-permittees, including local municipalities, are seeking comprehensive solutions for meeting these requirements. As a component of this effort, the Irvine Ranch Water District (IRWD) has developed a Natural Treatment System (NTS) Master Plan (NTS Plan). The NTS Plan addresses runoff water quality from a watershed-wide perspective, utilizing a network of constructed wetlands. The NTS Plan would build on IRWD's successful use of constructed wetlands by expanding their use throughout a highly urbanized and nearly fully-developed watershed. The NTS Plan, therefore, is viewed as an urban retrofit using constructed wetlands as an integral component for compliance with TMDL requirements. The advantage of the NTS system to IRWD, the primary provider of sanitary and potable water services for the watershed, is avoiding the increasingly costly trend in Southern California of routing low flows to sanitary treatment systems. This article describes the NTS Plan, the evaluation approach, and the evaluation results of the Plan's effectiveness for contributing to TMDL compliance.

PROJECT AREA

The San Diego Creek Watershed is located in Orange County, California (Figure 1) and covers approximately 120 square miles (311 km^2). The watershed is drained by Peters Canyon Wash and San Diego Creek, and by a number of smaller channels and drainages. San Diego Creek flows into Upper Newport Bay, which contains the 752-acre (3.04 km^2) Upper Newport Bay Ecological Reserve, one of the largest remaining coastal estuaries in Southern California. The San Diego Creek Watershed drains almost 80 percent of the 154 square miles (398.9 km^2) that are tributary to Upper Newport Bay.

The western and central portions of the watershed are a relatively flat alluvial plain, bordered by the Santiago Hills to the northeast and the San Joaquin Hills to the south. The alluvial plain rises gently from sea level at Upper Newport Bay to about 400 ft (122 m) above mean sea level (msl) at the El Toro Marine Base. The peak elevation in the Santiago and San Joaquin Hills is 1,775 ft (541 m) and 1,160 ft (355 m) above msl, respectively.

The San Diego Creek Watershed experienced rapid growth and development after World War II. Land-use estimates show that most of the developable lands in the watershed are currently developed (Table 1), with about 18 percent remaining. Much of remaining development would come from continued conversion of agricultural land and from land-use conversion of recently decommissioned military bases.

Table 1

Land Use	Existing (acres)	Estimated when Fully Developed (acres)	Percent Change of Watershed from Existing to Fully Developed
Agriculture	11,490	270	-14.8
Urban[1]	40,010	53,510	+17.8
Open[2]	24,280	22,000	-3.0

Table 1: Estimated existing and fully developed land uses acreages in the San Diego Creek Watershed.
[1] URBAN is the sum of commercial/light industrial, industrial, mixed use, all residential, roads, and transportation corridors.
[2] OPEN is the sum of open space-preserve, open space-other, parks, golf courses, and water land use categories.

Stormwater

San Diego Creek Watershed

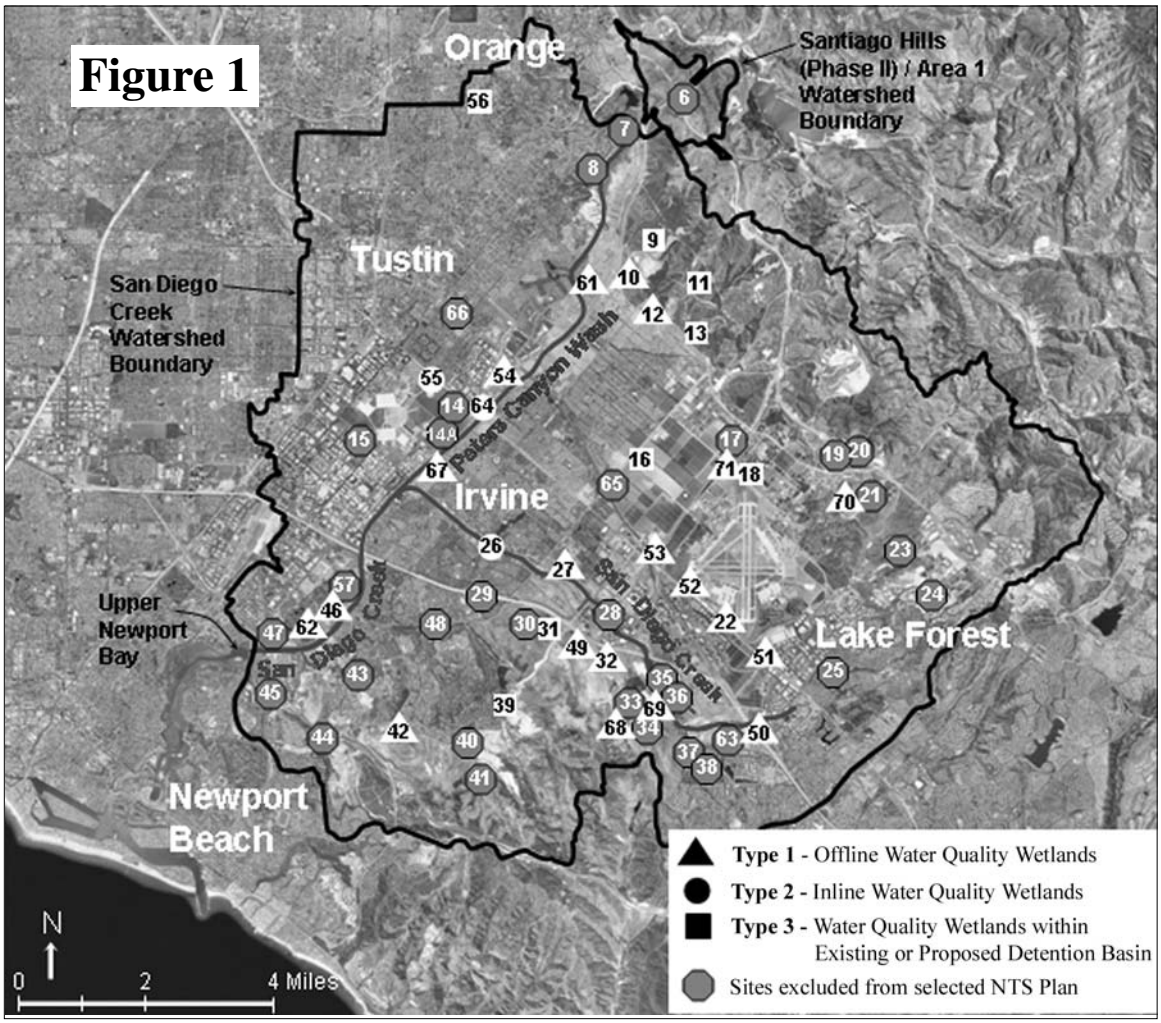


Figure 1: Aerial photograph of the San Diego Creek Watershed showing the locations of NTS Facilities and the types of wetland facilities.

Climate & Base Flows

The climate is characterized by warm dry summers, and cool intermittently wet winters. The main wet season is from November to April, during which widespread general winter storms may last for several days. The average annual rainfall is about 13 inches per year, with 90 percent occurring in the wet season. Average base flows in San Diego Creek are less than 16 cubic feet per second (cfs) (0.45 cubic meters per second (cms) during dry weather. The estimated peak 100-year flood discharge is 42,500 cfs (1,203 cms) in San Diego Creek at Newport Bay.

Plan Elements

NATURAL TREATMENT SYSTEM (NTS) MASTER PLAN

A Natural Treatment System (NTS) Master Plan for the San Diego Creek Watershed that includes a watershed-wide network of constructed wetlands was evaluated for treatment effectiveness. The evaluation was based on dry weather base flows and runoff from smaller, more frequent storms in a 120 square mile (311 km^2) urban watershed. The goal of the "regional retrofit" wetland network is to serve as an integral component in watershed-wide Best Management Practices (BMPs) for compliance with pollutant loading limits (TMDLs) requiring discharge limits of sediments, nutrients, pathogen indicators, pesticides, toxic organics, heavy metals, and selenium. The NTS Plan was assessed with "planning-level" water quality models that account for the integrated effects of the planned 31 NTS facilities.

The NTS Plan is estimated to achieve total nitrogen (TN) TMDL for base flows and reduce instream TN concentrations below current standards at most locations. Total phosphorous TMDL targets would be met in all but the wettest years. The fecal coliform TMDL would be met during the dry season, but not under all wet season base flow conditions, and not under storm conditions. The NTS Plan is not designed to meet the sediment TMDL, but would capture on average about 800 tons/yr (726,000 kg/yr) of sediment from urban areas. The wetlands are estimated to remove 13 percent of the total copper and lead, and 12 percent of the total zinc in storm runoff. The NTS Plan provides a cost-effective alternative to routing dry-weather flows to the sanitary treatment system.

Stormwater

Quality Factors

Flows

Bay Impairment

WATER QUALITY ISSUES AND REGULATORY REQUIREMENTS

Coinciding with rapid growth and development over the past 50 years, water quality in San Diego Creek and Newport Bay has been affected by:

- EXCESSIVE SEDIMENT LOADS and sedimentation in Upper Newport Bay, impacting beneficial uses of the bay and wildlife habitat;
- EXCESSIVE NUTRIENT CONCENTRATIONS (primarily nitrate from fertilizers) which contribute to the formation of algae blooms in Newport Bay;
- ELEVATED FECAL COLIFORM CONCENTRATIONS in Newport Bay (especially in storm runoff) which impact shellfish harvesting and recreational uses;
- ELEVATED CONCENTRATIONS OF TOXICS in portions of Newport Bay (primarily the pesticides Diazinon and Chlorpyrifos) which contribute to acute and chronic toxicity;
- ELEVATED CONCENTRATIONS OF HEAVY METALS in portions of Newport Bay (primarily copper) which "may be causing, or contributing to, toxicity to aquatic life" (RWQCB, 2000); and
- ELEVATED CONCENTRATIONS OF SELENIUM in San Diego Creek from natural origins (with the major source thought to originate from groundwater discharge to San Diego Creek in areas of a historic ephemeral lake in Peters Canyon Wash)

Water quality has been affected by both low-flows resulting from irrigation return flows, car washing, and groundwater recharge to streams, and stormwater discharges. Dry weather flows have increased with urbanization of open space and remained about the same, as compared to agricultural activities. The normal generalization that urbanization dries up base flows is typically not true in southern California because irrigation levels significantly exceed natural rainfall. These low flows have caused leaching of pollutants from soils, as well as transport of dissolved nutrients from planted areas.

As a result of these water quality problems, Newport Bay has been designated as an impaired water body by the State of California. In response, TMDLs have been established or drafted for the impairing pollutants (Table 2) (USEPA, 1998a,b; 2002). To address TMDL requirements, Orange County and local municipalities have implemented an array of Best Management Practices (BMPs) for load reduction, regional monitoring activities for the assessment of BMP effectiveness, and public education and coordination efforts. These activities are generally directed towards source control and do not fully address regional treatment needs for compliance.

Table 2

Constituent	General Information	TMDL
Sediment	Load is strongly correlated with rainfall. Annual average load estimate: 250,000 tons; 1998 load was 620,000 tons. In-stream sediment sources are being addressed by the County's sediment control plan.	62,500 tons/year to Newport Bay, 62,500 tons/year to the rest of the watershed, based on a 10-year running average.
Nutrients (TN and TP)	Declining trends in 1990's 1986 TN load = 1,448,000 lbs 1998 TN load = 632,000 lbs	Annual total load targets: 298,225 lbs Total Nitrogen/year by 2012 62,080 lbs Total Phosphorus/year by 2007
Pathogens	Fecal coliform bacteria used as an indicator. Goal is to achieve contact recreation standards by 2014.	5 samples/30-days with a geometric mean concentration of 200 organisms /100mL, and no more than 10% of the samples to exceed 400 organisms/100mL
Selenium (draft)	Natural sources from groundwater discharge & surface runoff 1998/99 estimate: 3,248 lbs/year	Annual total load targets = 891.4 lbs. Loads are partitioned into four flow tiers.
Heavy metals	Loads highly variable with rainfall: Total load (lbs) 1998 1999 Copper 15,087 1,643 Lead 10,385 449 Zinc 63,021 3,784	Concentration based TMDLs expressed at four flow tiers. The EPA divided flows in San Diego Creek into four flow regimes and developed concentration limits for each flow tier based on the average hardness value of the associated flow tier.
Chlorpyrifos & Diazinon	Widely used pesticides that are currently being phased out for non-commercial use. Both exceed the chronic concentration criteria in base flow and storm flow conditions.	SD Creek acute and chronic concentration targets, respectively, by 2005: Diazinon - 80 & 50 ng/L Chlorpyrifos – 20 & 14 ng/L
Organochlorine Compounds	Legacy compounds that tend to bioaccumulate and have considerable persistence in soils, sediments, and biota. Sources are unknown.	Annual load limits to Newport Bay (g/yr): Chlordane = 314.7; Dieldrin = 262; DDT = 432.6; PCBs = 282; Toxaphene = 8.9

Table 2: Listing of the constituents included in the San Diego Creek TMDLs, general information, and TMDL loading limits for watershed land uses.

Stormwater

Onsite Controls

Sewage Options

NTS Best Option

Controlled Wetlands

IRWD Example

Design Features

Open Water

Shallow Water

Retention Time

NATURAL TREATMENT SYSTEM PLAN

Plan Development Options

Various treatment-type control options were evaluated in developing the NTS strategy, including: (1) on-site controls for new development; (2) complete or partial diversion of dry weather base flows and portions of wet weather discharges to the sanitary sewer system; and (3) a regional treatment approach.

Given the urbanized nature of the watershed, a strategy that focused on on-site controls for new development (or re-development) could not, by itself, meet regulatory requirements in a timely manner. A strategy based on on-site controls would not address pollutants associated with existing urbanization in the San Diego Creek Watershed, nor disperse sources such as groundwater discharges.

Diversion of streamflow to the sanitary sewer was determined to be mostly infeasible, given the stringent total dissolved solids requirements for water recycling (an important IRWD water conservation tool), the cost for providing storage and treatment for the large volumes of water, and the need to maintain instream flows for riparian habitat and wildlife.

The NTS approach — based on a regional network of constructed wetlands — was determined to be the best strategy for addressing regional water quality treatment needs because: (1) constructed wetlands are an effective and cost-competitive approach for water quality treatment, based on the experience and success of the existing IRWD constructed wetlands in the San Joaquin Marsh (see description in next section), as well as other wetlands both regionally and nationally; (2) constructed wetlands address pollutant sources from existing and future development, as well as disperse sources; and (3) constructed wetlands can enhance habitat and natural resources in the watershed.

Constructed Wetlands

The facilities envisioned in the NTS Plan are constructed wetlands to improve the water quality of dry weather base flows and the runoff from smaller storms. Constructed wetlands are engineered systems designed to improve water quality by taking advantage of processes occurring in natural wetlands, but in a more planned and controlled system. Constructed wetlands have evolved and gained acceptance during the past 25 years as a practical and cost-effective means for advanced treatment of municipal wastewater and for treatment of urban runoff (Kadlec and Knight, 1996; Strecker, 1996).

A local example is the IRWD constructed wetlands at the San Joaquin Marsh near the mouth of the San Diego Creek Watershed. The IRWD constructed wetlands consists of five treatment cells with 45 acres of open water and 11 acres of marshland vegetation. It has been in operation for more than 5 years. Water is pumped from San Diego Creek into the wetlands at an average rate of about 7 cfs and has a retention time of about two weeks. Extensive monitoring data indicate that about 200 lbs (91 kg) of nitrate are removed per day during dry weather, reducing the total dry-weather load to Upper Newport Bay by about 30 percent. Data also show that the marsh contributes significant removals of metals and organophosphate pesticides. As the facility is located in the same watershed as the proposed NTS plan, loadings and operation of the proposed NTS facilities are expected to be similar to that at the existing San Joaquin Marsh. Thus, the strategy of the NTS Plan is to expand the success of the IRWD wetlands throughout the Watershed.

Facility Designs

Each of the 31 NTS facilities has been tailored to local conditions and constraints. Most of the NTS facilities, however, share common design features (see Figure 2). Throughout most of the year, the water quality wetlands will primarily treat low flows because rainfall events are infrequent in Orange County (10-15 events per year over 0.1 inch (0.25 cm)). During non-storm conditions, water levels in the typical wetlands will be in two general regimes:

OPEN WATER REGIONS, typically 4-6 ft (1.2-1.8 m) deep, are intended to help distribute the flow uniformly through the wetland vegetation and to trap course sediments. These areas are most effective at removing sediments and pollutants associated with sediments such as phosphorus, metals, and some organic compounds. Open water areas also facilitate destruction of pathogens by exposing them to sunlight.

SHALLOW WATER REGIONS, 1-2 ft (0.3-0.6 m) in depth, are intended to support the growth of emergent wetland vegetation (primarily cattails and bulrushes). These areas are most effective at removing nutrients, and to a lesser extent metals, pathogens, and toxic compounds.

The time required to obtain effective pollutant removal during low flows is estimated to be typically 7-14 days, depending on site conditions and temperature (Kadlec and Knight, 1996). Most NTS sites are designed for a 10-day retention time during low flow conditions. Sediments and pollutants that tend to attach to sediments are primarily transported by higher flows from storm events. Many of the NTS facilities are designed to detain and treat stormwater runoff by means of reduced flow outlets (perforated riser) that drain the stormwater over a period of about 36 hours. The depth of the stormwater quality pool

Stormwater

Settling

Habitat Enhancement

Selenium

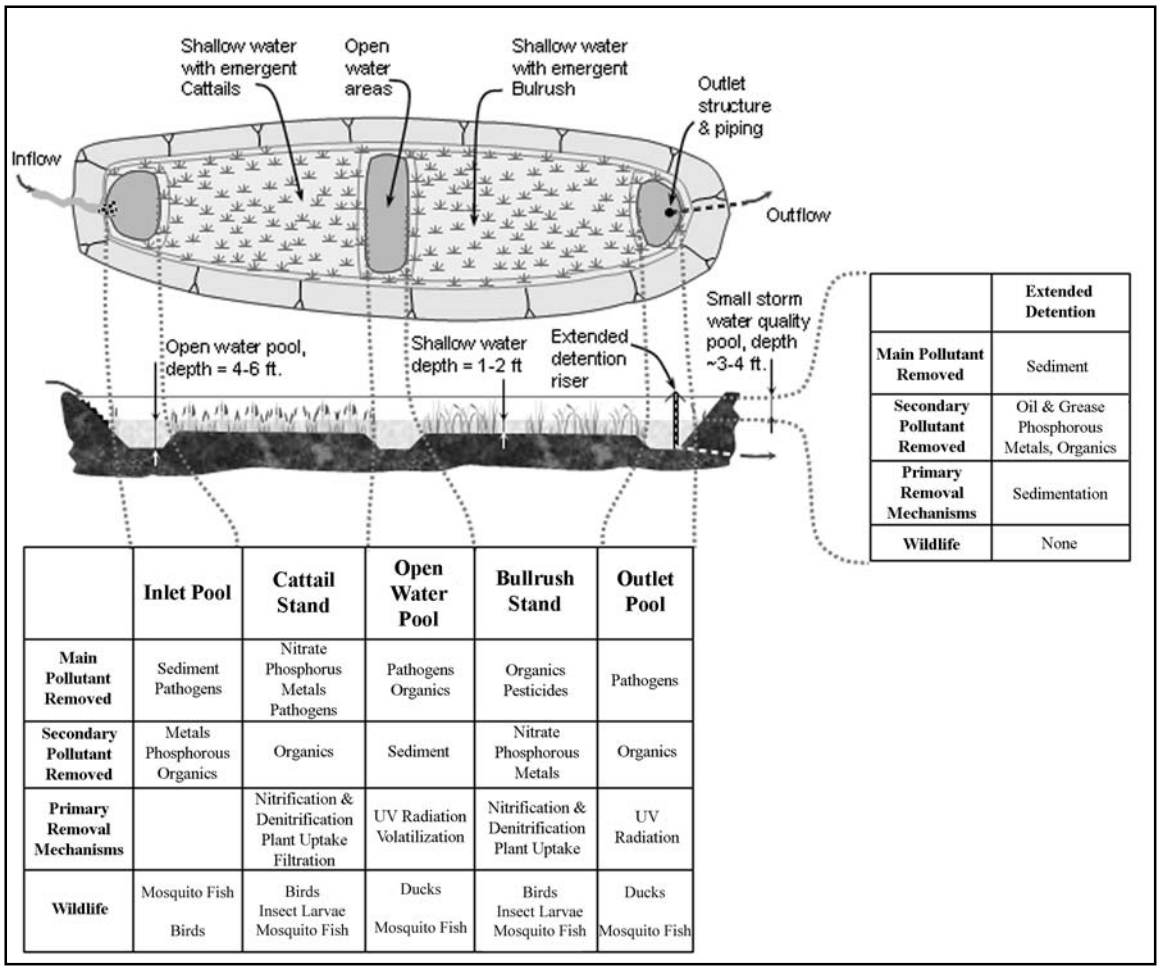
is typically 3-4 ft (0.9-1.2 m) above the normal low flow water level (Figure 2), thus inundating the wetland vegetation. Wetland vegetation would not be destroyed by inundation for short detention periods.

Removal of pollutants from storm runoff will primarily occur by settling processes. Therefore, the primary pollutants removed from storm runoff are sediments and pollutants associated with sediments such as phosphorus, metals, and some organic compounds. There will be little or no removal of dissolved nutrients (e.g., nitrate) during detention of storm runoff.

Habitat enhancement is an important aspect of the NTS Plan. The selection and planting of riparian vegetation between the wetlands and the surrounding habitat affect the habitat characteristics of the wetlands. Where feasible, native riparian vegetation will be selected to enhance habitat for endangered avian species.

San Diego Creek has consistently high levels of selenium, which originate from natural sources. A major source of selenium is groundwater discharge to the San Diego Creek in a historical ephemeral lake and marsh region. Selenium was historically immobilized and trapped in the historic marsh due to the presence of reduced anoxic conditions. Drainage of the swamp in the early 1900's for agriculture allowed oxygenated groundwater to flow through the marsh, creating soluble and mobile forms of selenium that are now being flushed to the creek.

Figure 2



	Extended Detention
Main Pollutant Removed	Sediment
Secondary Pollutant Removed	Oil & Grease Phosphorous Metals, Organics
Primary Removal Mechanisms	Sedimentation
Wildlife	None

	Inlet Pool	Cattail Stand	Open Water Pool	Bullrush Stand	Outlet Pool
Main Pollutant Removed	Sediment Pathogens	Nitrate Phosphorus Metals Pathogens	Pathogens Organics	Organics Pesticides	Pathogens
Secondary Pollutant Removed	Metals Phosphorous Organics	Organics	Sediment	Nitrate Phosphorous Metals	Organics
Primary Removal Mechanisms		Nitrification & Denitrification Plant Uptake Filtration	UV Radiation Volatilization	Nitrification & Denitrification Plant Uptake	UV Radiation
Wildlife	Mosquito Fish Birds	Birds Insect Larvae Mosquito Fish	Ducks Mosquito Fish	Birds Insect Larvae Mosquito Fish	Ducks Mosquito Fish

Figure 2: Generic Design and Removal Mechanisms of NTS Facilities, showing a plan view and information on intended pollutant removals in each sub-area of the wetland.

Selenium Reduction

Elevated selenium levels must be reduced in accordance with the draft TMDL for selenium. To address the TMDL, the NTS Plan includes one facility for selenium removal (Site 67) located in the historical ephemeral marsh region. The selenium approach is to mimic the selenium sequestrating processes that occurred in the historical marsh in a subsurface flow treatment wetland. Stream water would be diverted through organic rich native soils under anoxic conditions, creating reduced forms of selenium that are immobilized .

Stormwater

Site Screening

Regional Considerations

Local Sites

Categories

Modeling Strategy

Facility Selection

Potential NTS sites were selected using a simple screening process. Staff at IRWD developed an initial list of potential sites based on their knowledge of the watershed and information in their databases. Following field visits, the initially selected sites were assessed by preliminary technical analyses and institutional and community acceptance assessments. This process was followed by successive rounds in which some sites were removed from further consideration due to technical constraints (i.e. ability to divert flows to wetlands) or other considerations (i.e. land availability, public acceptability, etc), and replaced with new sites. In total, more than 70 sites were considered for the NTS Plan — 31 were retained for detailed assessment. The location of all NTS sites is shown in Figure 1.

The NTS Plan includes regional sites and local facilities. Regional facilities are retrofit systems constructed by IRWD and are generally located on land dedicated to other functions. Regional sites are located in regional flood control facilities operated by the County Flood Control District, in local detention basins owned and operated by Caltrans, in existing flood control channels, on land owned by IRWD, and in one case on a school playground. The local sites will be built in conjunction with private development projects and are located on private land owned by the developers.

The NTS facilities are categorized by their location in reference to stream channels and whether they are being added to a flood retarding basin: Type I off-line facilities are adjacent to existing channels and require diversion structures for influent and effluent to the facility; Type II in-line facilities are wetlands that are established within existing stream channels; and Type III facilities are established within existing or planned retarding basins, and make use of the local storm drains.

EVALUATION OF THE NTS PLAN

The NTS Plan was evaluated using planning-level water quality models that primarily rely on local hydrologic and water quality data, and data collected on the performance of local and national wetlands. The purpose of the water quality models was to provide planning-level assessments of the NTS Plan alternatives, and to evaluate the NTS contribution to TMDL compliance.

THE MODELING STRATEGY STEPS USED TO EVALUATE THE NTS PLAN INCLUDED:

- FORECASTING LAND USES: The NTS Plan was evaluated under the assumptions of complete development in the watershed ("build-out" conditions) and full implementation of NTS facilities.
- FORECAST HYDROLOGY AND POLLUTANT LOADS UNDER BUILD-OUT CONDITIONS: Estimates of flow conditions and pollutant loads were forecasted for future land use conditions using available monitoring information and statistical correlations between current and projected land uses.
- ESTIMATE LOAD REDUCTIONS IN THE NTS FACILITIES: Water quality models were developed to estimate pollutant loads and load reductions occurring in individual NTS facilities and as a network of NTS facilities. The water quality models take into account the interrelationships of individual facilities that occur when pollutant removals in up-stream facilities affect pollutant loads at down-stream facilities. Separate models were developed for low flow and storm flow conditions and different pollutants were modeled for different flow regimes, depending on the pollutant characteristics and TMDL requirements. The stormwater model is a typical pollutant-loading model, based on adaptation of the Simple Method (Schueler, 1987). A basic first-order kinetics model was used to estimate nitrate and coliform removal occurring in the wetlands during dry-weather conditions. Pertinent processes and assumptions are summarized in Tables 3 and 4.

Table 3

Parameter / Process	Assumption / Approach
Load reduction	Evaluated with a first-order kinetics model with background concentration.
Steady state	Seasonal average steady state conditions were assumed.
Atmospheric sources	Water and pollutants from atmospheric sources were assumed negligible compared with influents flows and loads.
Stream flow	Estimated with seasonal based empirical relationships that account for projected land-use and groundwater contributions. Equations were developed by regression analysis using available stream flow data and geographical information.
Evapotranspiration	Estimated with available monthly average reference evapotranspiration.
Infiltration	Assumed negligible based on planned use of liners in areas with poor soil conditions.
Background concentration	1 mg/L for total nitrogen; 50 MPN/100 mL for fecal coliform bacteria
First-order rate constant	TN removal: 0.55 and 0.25/day for the dry and wet seasons, respectively. Fecal coliform: 75 m/year (area based)
Residence time	7-14 days
Open water ratio	Open water areas constitute 20 percent of the wetlands, except near airports where no open water areas were included.
Period of operation	165 days in the dry season; 150 days in the wet season
Influent concentration	Average seasonal concentrations estimated from available monitoring information

Table 3: Approach and Assumptions used in the Low Flow Model.

Stormwater

Nitrogen Removal

Estimated Nitrogen Removal

Nitrogen removal was modeled only for low flow conditions, consistent with the TMDL requirements. The modeling results indicate that the NTS facilities would remove about 231,000 lbs (104,800 kg) of total nitrogen (TN) annually, and that both dry and wet season TMDLs would be met (Table 5). In general, wet-season TMDLs are more difficult to achieve because loads are higher in the wet season and removal rates are smaller due to lower temperatures and reduced biochemical activity. The modeling results reveal that a large proportion of the TN removal occurs at the larger sites located in the downstream reaches of the watershed. Smaller sites distributed in the upstream reaches remove less TN on a percentage basis, but contribute to the improvement of "local" instream water quality. Model predictions indicate the NTS Plan would significantly reduce instream TN concentrations, meeting water quality objectives at nearly all locations.

Table 4

Parameter / Process	Assumption / Approach
Annual Model	Uses annual rainfall depths to estimate annual runoff volume and pollutant loads.
Sediment Sources	Post-construction sediment sources from urban and open space areas. Does not address in-stream sediment sources.
Annual Rainfall Depth	Determined from 21-year hourly rainfall records. Rainfall was reduced by a correction factor to account for events that produce no appreciable runoff.
Runoff Volume	Estimated as a function of land-use with the rationale formula where the runoff coefficient is expressed as a linear function of percent imperviousness.
Stormwater Pollutant Concentrations	Estimated with land-use based Event Mean Concentration (EMC) values from available local and regional stormwater monitoring data.
Capture Efficiency	Estimated by routing stormwater runoff volumes obtained from hourly rainfall data through the NTS facilities. Different routing rules were used depending on the facility type.
Background Concentration	1 mg/L for total nitrogen; 50 MPN/100 mL for fecal coliform bacteria
BMP Performance	Data available from the USEPA's Nationwide BMP data was assumed to be representative of the treatment performance in the NTS facilities-ASCE, 2001; Strecker et. al., 2001

Table 4: Approach and Assumptions used in the Storm Runoff Model.

Nitrogen Loads

Table 5

Load to Newport Bay	Dry Season Low Flow	Wet Season Low Flow
Without Plan (lbs/season)	197,700	232,700
Load Removed by NTS (lbs/season)	127,300	103,500
With Plan (lbs/season)	70,400	129,200
TMDL (lbs/season)	153,861 (2007)	144,364 (2012)

Table 5: Summary of Estimated TN Loads to Newport Bay that show that TMDL loading limits are predicted to be met by implementation of the NTS Plan.

Estimated Sediment and Phosphorus Removal

Sediment Factors

Monitoring data indicate that sediment loads are strongly linked to winter storm flows and that highest sediment loads occur in above average rainfall years. Sediment reduction was therefore modeled only for storm flow conditions. However, not all sediment sources were modeled (as indicated in Table 6). By far, the majority of the sediment loads are associated with channel erosion and scouring from instream sediment basins, although the TMDLs do not recognize this major source directly. Instream sediment sources were not modeled because they are being managed through the implementation of the Sediment Control Section 208 Plan, using upstream debris basins and instream debris basins in downstream areas. Only urban and open space land surface sources of sediment were included in the model. The land surface sediment loads include sources from urban and agricultural land uses, runoff from open space, and construction activities. Construction related sources, however, were assumed negligible at build-out.

Phosphorus Issues

Although the phosphorus TMDL is specified in terms of an annual load to Newport Bay, monitoring data indicate the majority of the phosphorus load is in runoff from storm events. Phosphorus is mainly present in particulate form, attached to sediments transported during winter storm flows. Therefore, phosphorus treatment was modeled only for storm flow conditions consistent with the monitoring information. Average annual phosphorus loads and removals were quantified with the storm flow water quality model, identical to the approach used for sediments. Only urban and open space land-use sources of phosphorus were modeled. The NTS Plan was not intended to treat instream sources of phosphorus; therefore it was assumed that bank stabilization measures and other BMPs would effectively control instream sources at build-out.

Stormwater

Modeling Results

The storm flow model is based on rainfall/runoff relationships for the annual precipitation record from 1978-1998, as well as the average annual rainfall for this 21-year period. Model results estimate that NTS facilities remove about 800 tons/yr (726,000 kg/yr) of sediment during average rainfall conditions, or about 17 percent of the mean annual sediment load attributed to urban and open space land sources under build-out conditions. The NTS facilities would remove an estimated 4,300 lbs (1,950 kg) of TP per average year, or about 10 percent of the annual TP load from urban and open space sources. The 2012 TMDL target for TP (62,000 lbs/yr or 28,120 kg/yr) would be met in all but the wettest rainfall years. The two years where the TMDL was not met were the two highest rainfall years in the 21-year record, with 1998 also being a record rainfall El Nino year.

Table 6

Sediment Source	TMDL Allocation (tons/year)	Modeled in NTS Evaluation
In-stream Erosion & Scouring from In-Line Sediment Basins	None	No
Dedicated Open Space	28,000 discharged to Newport Bay 28,000 retained in sediment basins	Yes
Agricultural	19,000 discharged to Newport Bay 19,000 retained in sediment basins	Yes
Urban (commercial, residential, transportation, and industrial)	2,500 discharged to Newport Bay 2,500 retained in sediment basins	Yes
Construction Activities	13,000 discharged to Newport Bay 13,000 retained in sediment basins	No

Table 6: Summary of Sediment Sources, TMDL Allocations, and Modeling Approach

Pathogen Indicators

Estimated Coliform Removal

The TMDL for pathogen indicators (fecal coliform) is valid throughout the year under all flow regimes. Therefore, fecal coliform removal was modeled for both low flow and storm flow conditions. Low flow conditions were modeled as a time series for comparison with monitoring data from a one-year monitoring period beginning in April 1999. Modeling results indicate that during dry weather base flow conditions, fecal coliform concentrations would be reduced below the 30-day geometric mean standard of 200 MPN/100mL. The maximum 400 MPN/100mL standard would be met in most, but not all, of the dry season low flows. The standards are not met during the wet season base flow conditions.

Storm Events

Removal of pathogens from storm runoff was modeled as equivalent fecal coliform loads. Modeling suggests NTS facilities will reduce fecal coliform concentrations by around 30 percent. However, concentrations entering Newport Bay will remain above TMDL targets during storms. Inability to meet TMDL targets in the wet season is attributed to overwhelming pathogen loads during storms.

Metals

Estimated Metals Removal

Monitoring data indicate that the majority of metal loads in San Diego Creek are sorbed metals associated with sediment loads from winter storm events. Therefore, assessment of metal load reduction was carried out for total metal loads under storm flow conditions. Removal of total metals in NTS facilities was evaluated for copper, lead, and zinc. Average annual loads to Newport Bay from urban and open land sources for total copper, lead, and zinc are estimated at about 3,200, 1,300, and 20,000 pounds, respectively. The NTS Plan is estimated to remove about 13, 10, and 12 percent of the total copper, lead, and zinc loads attributable to urban and open land sources. Table 7 summarizes the estimated average dissolved metal concentrations in stormwater from urban and open space areas. These results show that the TMDL objective at the large and medium flow regimes is achieved on "average" at build-out for both with and without NTS Plan conditions. The results suggest that TMDL compliance is most easily achieved for lead and zinc and is more difficult to achieve for copper. These "average" results to do not indicate the frequency at which occasional exceedances could occur.

"Average" Results

Table 7

Metal	Average Annual Dissolved Metal Concentration in Storm Runoff at Build-out from Urban and Open Space Sources (ug/L)		TMDL for Medium Flow Regime (182-814 cfs)		TMDL for Large Flow Regime (>814 cfs)
	Without Plan	With Plan	Acute (ug/L)	Chronic (ug/L)	Acute (ug/L)
Copper	14.5	12.8	30.2	18.7	25.5
Lead	2.1	1.9	162	6.3	208
Zinc	121	105	243	244	135

Table 7: Estimated Average Annual Dissolved Metal Concentration in Storm Flow

Stormwater

Selenium Treatment

Estimated Selenium Removal

The design of the selenium treatment wetland at Site 67 was partially based on a successful treatment facility operating near the San Francisco Bay, which has similar site characteristics (Hansen et al., 1998). This facility was able to achieve selenium reduction below the water quality standard of 5 parts per billion (ppb). The proposed selenium treatment wetland at Site 67 is located in the historical marsh region, which is thought to be a significant source area in the watershed. This facility is estimated to remove about 200 lbs (91 kg) per year, or about 20-to-50 percent of the low flow selenium loads to Newport Bay. While the facility will significantly contribute to the reduction of low flow selenium loads, it will not, by itself, allow for attainment of the proposed TMDL targets. This is because other tributaries also contribute selenium loads to Newport Bay.

Subsurface Flow Treatment

The feasibility of using subsurface flow wetlands to treat selenium was tested with laboratory-scale treatability studies using local creek water and soils. These tests were conducted by IRWD to verify the effectiveness of the selenium treatment approach and to provide information for the design of field-scale pilot tests. These treatability tests involved: (1) static tests in soil columns to evaluate a variety of media types; and (2) flow through tests using a series of sand-tank reservoirs. Results suggest that high levels of selenium and nitrate removal are potentially achievable with a subsurface treatment approach. A design of such a system is underway.

NTS PLAN ELEMENTS

On-Going Activities

Maintenance

Regular and unscheduled maintenance activities will be required for all NTS facilities. Safe Harbor and access agreements will be processed to ensure that maintenance requirements can be carried out. MAINTENANCE ACTIVITIES WILL INCLUDE:

- trash and debris removal
- pump servicing
- vegetation removal and planting
- sediment removal
- installation and removal of seasonal weirs
- vector control activities
- emergency repairs

Minimization measures will be undertaken to limit impacts to wildlife and habitat from maintenance activities. IRWD will be the maintenance provider of all facilities, which will be funded by user fees assessed by IRWD. Long-term regular maintenance by a single service entity is considered a benefit of the NTS program because it will ensure that needed maintenance will be conducted.

Regional Monitoring

Monitoring

Monitoring is a key component of the NTS Plan. There are three aspects to the monitoring program: routine monitoring, site performance monitoring, and TMDL compliance monitoring. Routine monitoring activities include site inspections, sediment accumulation monitoring, vegetation monitoring, monitoring of pollutant accumulation and distribution, and vector pest monitoring. Detailed performance monitoring will be conducted for selected NTS facilities to evaluate their treatment effectiveness and operating constraints. Experience gained from these assessments will be used to improve designs and operation practices of the NTS facilities. Regional monitoring will be conducted to assess the performance of the entire NTS network, in combination with other BMPs, for meeting the TMDL and other goals.

Mosquitoes

Vector Control

Wetlands can provide breeding habitat for numerous pests and vectors, most notably mosquitoes. A comprehensive Vector Control Plan was developed, which includes the use of Mosquito Fish and the application of a natural microbial pesticide (*Bacillus thuringiensis israeliensus,* Bti) for the control of mosquitoes. With the increasing attention being paid to West Nile Virus, the control of mosquitoes will be increasingly important. The Vector Control Plan was developed with the local vector control agency. Implementation of the plan will be carried out by the same agency to ensure its success. With the West Nile virus concerns, the Vector Control Plan is receiving additional attention, as it should.

Flexibility

Program Modification

The NTS Plan is intended to be flexible. The NTS Plan would be formally evaluated on a regular basis to ensure that it is working as intended and to evaluate changes to the program that can improve the overall performance. Sites could be added or deleted in response to new opportunities, needs, or constraints. Site designs and operation practices could be changed as monitoring experience is gained. Adaptive management based on formal program review, together with regular monitoring and maintenance, is intended to insure long term sustainability of the wetlands and the NTS.

Stormwater

Costs

Retrofit

Cooperation

Accelerated Planning

SALIENT ISSUES

The estimated cost to provide low-flow treatment of urban runoff in a sanitary treatment plant is greater than $60 million in construction costs, with annual operation and maintenance costs of about $5 million. The NTS System is expected to cost about $6.4 million for first-phase construction of the 12 regional NTS sites, and $1.1 million annually for ongoing operations, maintenance, and routine monitoring. These costs do not include the cost of projects funded by local developers or costs of second-phase regional project sites. A comparison of the capital cost per unit pollutant removed, indicates that the treatment plant is about four to five times more costly for TN removal from low flows.

The San Diego Creek Natural Treatment Systems Plan has been designed to result in a cost-effective solution that meets many goals. The effectiveness of the NTS Plan will ultimately be determined through the long-term coordinated efforts, spanning the planning, implementation, and program evaluation stages.

Observations and conclusions from the development and initial evaluation of the NTS Plan are:

- Retrofit options are necessary to meet water quality goals in watersheds that are highly developed. It is possible to develop cost-effective regional retrofit solutions on a large watershed basis that would result in significant water quality improvements;
- Existing flood control basins and conveyance facilities can be cost-effectively retrofitted;
- The NTS Plan has resulted from a cooperative problem-solving focus by municipalities, development interests, water and sewer providers, and environmental groups. This effort has not focused on just meeting single-purpose requirements, and therefore has resulted in a more robust plan. Consequently, the NTS approach can achieve multiple benefits, including habitat and aesthetic values;
- The NTS Plan was developed in a relatively short 15-month time frame, demonstrating that planning efforts can be accelerated when there are motivated interests; and
- Cost-recovery from other sources of funds is possible when urban runoff treatment requirements include treating dry weather flows.

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SNAKE RIVER WATER RIGHTS

THE NEZ PERCE AGREEMENT

by Jerry R. Rigby; Rigby, Thatcher, Andrus, Rigby & Moeller (Rexburg, ID)

Nez Perce

Swan Falls Agreement

SRBA

Tribe's Claims

Curtailment

Opposition

SRBA Decision

Mediation

Expanded Forum

BRIEF HISTORY OF THE SNAKE RIVER ADJUDICATION

The State of Idaho has been involved in an adjudication of all water rights in the Snake River and its tributaries for almost twenty years. The initial impetus for the Snake River adjudication was the State of Idaho's settlement of a major lawsuit with Idaho Power over the water rights of its power plant located at Swan Falls on the Snake River (the "Swan Falls Agreement"). Included in the settlement terms was the requirement for Idaho to proceed with the adjudication of the entire Snake River and its tributaries, including those rights held or claimed by the federal government and the Native American Tribes.

A single State court action was filed by the State of Idaho in the State's district court authorized to hear all associated adjudication claims — i.e., the Snake River Basin Adjudication (SRBA) Court. Beginning in 1987, all claimants of water rights were required to file claims with the SRBA Court. The water right or claim made by each water right holder was deemed a sub-case to the State's original action. The federal government was included in the adjudication and filed nearly 6,000 claims for all of its agencies, including claims for certain tribes under its duty as trustee. Since these claims were filed at the end of the 1980's, the court has been involved in a basin-by-basin adjudication of approximately 180,000 claims. The cost to the State for this adjudication is approaching a half-billion dollars.

One-by-one, the federal claims were either litigated or negotiated to a resolution. These included federal claims under the Wilderness Act, the Organic Act, the Multiple Use Act, the Wild and Scenic Act, the Deer Flat Federal Refuge and the National Recreation Area Acts. Several of these claims required a decision of the Idaho Supreme Court before the appeals ended.

The Nez Perce Tribe's (Tribe's) largest claims, filed in 1993, presented issues that were significantly different from most other claims. Not only were the tribal claims for most of the flow in the Snake River, they also claimed a priority date of "time immemorial." The Tribe's claims were primarily based upon the Tribe's treaties of 1855 and 1863, which the Tribe asserted granted it off-reservation instream flows. Had those claims been decreed as initially filed, virtually every existing, longstanding use of water would have been facing total curtailment. From the beginning, it was quite apparent to all parties involved in the SRBA that the Tribe's claims would have to be litigated (or settled) because the impacts of off-reservation instream flows with "time immemorial" priority dates would have resulted in unacceptable impacts for all junior water users.

Since most non-tribal rights would be similarly impacted, as was the case with other federal claim actions, those with common interests joined together to defeat the Tribe's claims — including any off-reservation instream flow rights in the Snake River. The State of Idaho was represented by the Attorney General's office (working with the Governor's office) and the Idaho Water Resource Board (the state's agency authorized to negotiate on behalf of the state on water issues). The other significantly organized group was known as the Federal Claims Coalition (Coalition). The Coalition was primarily comprised of irrigation, industrial and municipal interests. Following the standard initial discovery and motions, an application for summary judgment was filed by the State and the Coalition in July of 1998. The SRBA court held by summary judgment that nowhere in the treaties, federal law or state law was there any support for granting the Tribe an off-reservation instream flow water right in the Snake River (November 10, 1999). Not surprisingly, the decision was appealed to the Idaho Supreme Court.

BRIEF HISTORY OF THE TERM SHEET (THE "AGREEMENT")

As is common in Idaho's adjudication, prior to any trial on a contested water right the water court consistently requires the parties to mediate. In the Tribe's sub-case, the state court had previously encouraged the parties to do so. Nevertheless, the initial mediation resulted in little, if any success. However, once the summary judgment was granted in 1998 and the appeal made, mediation took on a whole new life for both sides. For the Tribe, it provided a forum in which to mediate its claim against the United States for breach of its fiduciary duty as trustee of the Tribe's interests. For the State and the Coalition, it was a forum in which to also mediate their future roles and obligations under the federal Endangered Species Act (ESA) and federal Clean Water Act (CWA) with the United States. It seemed clear to most water right holders that prevailing against the Tribe in the adjudication process would do little good if the same water claimed by the Tribe would later be required to be left undiverted in the river in order to fulfill a biological opinion requiring instream flows for endangered species in the Snake River. In other words, the water quantities being discussed by some within the federal agencies would have

Nez Perce

Gag Order

Idaho Power Departure

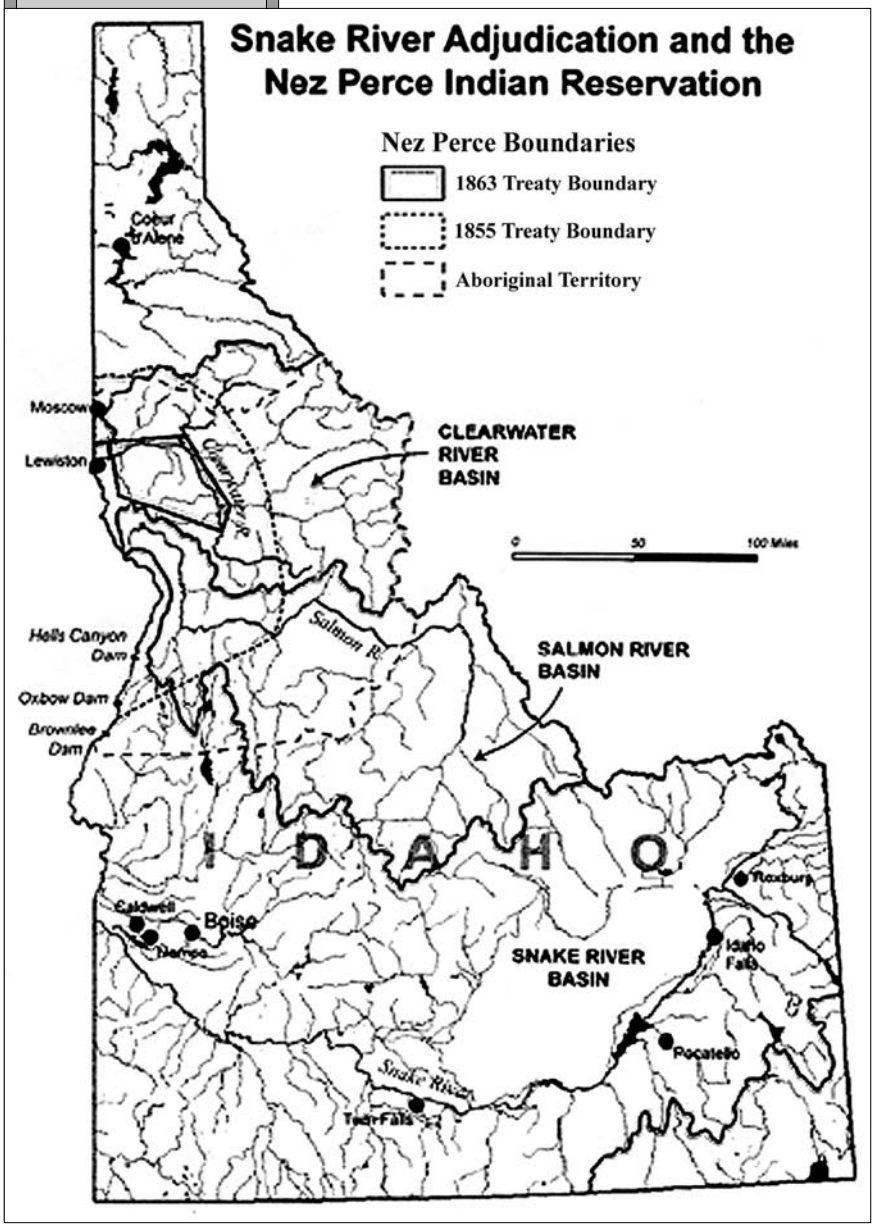
US: One Voice

resulted in similar, unacceptable impacts to the State and Coalition's water rights as would the Tribe's claims had they been granted.

It became clear to those involved that enlisting the expertise of a mediator with experience in getting large groups with divergent interests to work together was necessary. Francis McGovern, a law professor from Duke University and Stanford, was agreed upon by all parties. The Court then ordered mediation. A gag order was placed on all parties as to any of the terms proposed or discussions held in the mediation. The mediation continued for over five years. It initially involved virtually all the parties to the original case. However, as the mediation progressed certain groups dropped out, most notably the Idaho Power Company. Idaho Power left the mediation mainly due to issues related to its re-licensing of its Hell's Canyon Complex of dams on the Snake River. It seemed clear that certain re-licensing issues could not be mediated and would be faced again in re-licensing in any event.

The mediation was fraught with perils and hidden agendas. There were many occasions where each side came away believing that a consensus was absolutely impossible. Because there were so many issues to mediate, many of which had nothing to do with some parties but everything to do with others, many times one camp didn't even know or understand where a certain issue stood within another camp.

The mediation process, however, resulted in the United States actually speaking with one voice, instead of the sometimes disparate voices of its numerous agencies. The State and the majority of the water users knew that the chance to have most of their federal issues resolved in one package might not arise again. This opportunity was one of the main reasons why the mediation continued to function.



Interestingly, one of the times when the mediation came closest to resolving many of the Coalition and State's interests was at the end of the Clinton Administration immediately prior to President Bush's inauguration. The chief government negotiators were desperately trying to finalize the mediation prior to leaving their posts. Unfortunately, the process stalled at the last moment. Once the new federal team came in the mediation once again bogged down, even taking on many new issues not addressed by any of the parties in the pre-Bush mediation.

The mediation was at its lowest ebb just before it was finalized in the spring of 2004. Various parties resorted to contacting each other directly without going through the mediator. Finally, it appeared that everything might come together. Granted, there were still those who wouldn't ever agree. A few Coalition members never did sign the mediation agreement. However, a settlement was reached. The agreement was entitled the *Mediator's Term Sheet* (April 20, 2004). Term sheets are generally two- or three-page documents setting forth agreed upon terms, leaving unresolved details which then need to be worked out by the parties. However, this term sheet actually embodied most of what generally would be considered the full "agreement" and contained most of the details as to the terms.

AGREEMENT COMPONENTS

The *Term Sheet* is basically comprised of four components:

1) Nez Perce Tribal Component
2) Salmon/Clearwater Component
3) Snake River Flow Component
4) General Conditions Applicable to Entire Agreement and to all Parties Component.

Nez Perce

Primary Terms

Instream Flows

Habitat Improvement

Biological Opinion

Minimum Flows

Flow Lease

Water Purchases

Although by no means comprehensive, the following sets forth the primary terms to the Agreement:

1) Nez Perce Tribal Component:

- Provides $50 million in trust to Tribe for natural resource and economic development
- Provides $23 million to Tribe for sewer, domestic water supply system and water quality lab
- Provides $10.1 million to Tribe in lieu of providing for 45,000 acre-feet (AF) of Payette River (a tributary to the Snake River) storage space in Cascade Reservoir for a 30-year rental term (as claimed by the Tribe)
- Grants the right to the Tribe, in concert with the US and Idaho, to determine the use of 200,000 AF of water in Dworshak Reservoir (on the Clearwater River above Lewiston, ID) for flow augmentation
- Grants Tribe a multiple-use water right of 50,000 AF per year (most from the Clearwater River) to be used on Tribal lands with protection built in for injury to other existing water rights
- Grants Tribe a right to a decree to continue its nonexclusive use of "springs and fountains" on federal lands within the 1863 treaty ceded area only; all other such claims upon non-federal lands were waived
- Conveyed federal Bureau of Land Management (BLM) lands within boundaries of reservation valued at $7 million to Tribe
- Transfers management of Kooskia federal hatchery on the Clearwater River to the Tribe and creates a co-management relationship with the government for the Dworshak hatchery

2) Salmon/Clearwater Component:

- Instream flows are to be established and held by the Idaho Water Resource Board in trust for the state of Idaho on selected streams of importance to the Tribe. All present uses were protected and the instream flows are subordinated to all future domestic, commercial, municipal and industrial uses. Furthermore, in particular reaches of the streams, the instream rights will also be subordinated to certain future agricultural and other uses
- State of Idaho will administer a cooperative agreement under the ESA to enhance riparian habitat and protect existing and future state-permitted uses
- Riparian/stream bank protection measures will be modified under the Forestry component to improve habitat for aquatic species on all enrolled lands. However, enrollment is not mandatory. This supplements the Forest Practice Rules presently in place for Idaho for all state and private landowners within the basins
- Habitat Trust Fund will be established to provide funding for habitat improvement projects for the programs established under this agreement within the Salmon/Clearwater basins.

3) Snake River Flow Component:

- Biological Opinion will be issued for the term of the Agreement (thirty years with opportunity for renewal upon mutual agreement) which will provide incidental take coverage, if necessary, for all federal actions and related private actions including US Bureau of Reclamation (Bureau) actions in the Upper Snake River and all private depletions above Hells Canyon Complex as they affect listed anadromous fish and listed resident species (with qualifications). The Biological Opinion is required to be separate from any Federal Columbia River Power System Biological Opinion
- Minimum stream flows established by the Swan Falls Agreement must be decreed in the SRBA court and held by the Idaho Water Resource Board (IWRB) with SRBA injunctive relief granted to any party who seeks to enforce the required flows
- State of Idaho is required to extend the provisions contained in Idaho Code 42-1763B for the term of the Agreement to allow the Bureau to lease up to 427,000 AF of water from willing lessors for flow augmentation from the Idaho water banks procedures established pursuant to the IWRB rules. Although prices are set forth within the Agreement, the Term Sheet recognizes that changes to those prices may occur under certain conditions
- The Bureau is also allowed to "rent" or "acquire on a permanent basis" up to 60,000 AF of consumptive natural flow water rights diverted and consumed below Milner Dam and above Swan Falls from the mainstem of the Snake River
- United States will partially mitigate the impacts of the 60,000 AF of water allowed to be acquired by it under the Term Sheet by paying a one-time payment of $2 million to the local governments.
- Under certain restrictions, the Bureau would be allowed to use its powerhead water to increase the reliability of the 427,000 AF for flow augmentation
- The Bureau shall make its uncontracted space in reservoirs available to irrigation delivery entities provided the equivalent amount of replacement water from subbasins within the Upper Snake is used for flow augmentation. 30,000 AF of water from the Payette River will be made available for irrigation subject to certain triggers and conditions

Nez Perce

Off-Ramps

- Bottom line is that the United States was granted the right to no more than a total of 487,000 AF in any one year.
- Water acquired by the US for flow augmentation will "to the maximum extent practicable" be managed to meet the needs of all species covered by the Term Sheet; not result in a violation of the CWA or result in jeopardy to other species in Idaho; and not result in significant adverse impacts to recreational uses of the waters of the Snake River and its tributaries within Idaho
- Because no pre-decision can be made to a Biological Opinion, specific off-ramps were granted to the State and Coalition which allowed them to terminate the settlement upon written notice should the Biological Opinion differ significantly from the terms of the Agreement. Also, other conditions with appropriate off-ramps are in place should such items such as re-initiation of consultation be required, a jeopardy opinion is issued on the Upper Snake River Bureau projects, or a party fails to implement any provision of this component
- Neither the State of Idaho nor the private parties concede: that Bureau flow augmentation actually benefits the listed species; that Bureau operations require ESA consultation or modification; and that diversion, storage or use of water in the State of Idaho is subject to modification to meet ESA requirements or concerns

4) General Conditions Applicable to Entire Agreement and to all Parties.

- Requirement to enact necessary laws by federal, state and tribal governments to effectuate and implement the Agreement consistent with its provisions to provide ESA and CWA protection for the State of Idaho and the private parties to the Agreement
- Agreement to negotiate mitigation of impacts caused by management of water by Federal agencies
- ESA and CWA compliance assurances for the term of the Agreement

Waiver of Injury

- Tribes' claims for water rights in the SRBA court will be forever waived and released (except for those specifically granted in the term sheet). Furthermore, the Tribes claims for injuries to such water rights or to its treaty rights relating to water flow rights will also be forever waived and released
- Supreme Court of Idaho must remand the pending Nez Perce appeal to the SRBA court for entry of an order consistent with the Term Sheet
- Drop-dead date for most of the actions required of the parties of March 31, 2005

TERM SHEET AGREEMENT IMPLEMENTATION STATUS

On May 15, 2004, a formal agreement announcement was made. Executives and administrators representing the parties who signed the mediation held the photo-op news release. Those attending understood that the battle was far from over, however. The Term Sheet required, among other things, that the three major governmental players would have to pass legislation (or in the case of the Tribe, obtain its Executive Counsel's approval) in order to provide the necessary authority that the Term Sheet required. In addition, an ESA-related biological opinion which didn't unravel the necessary terms of the Agreement would have to be issued and approved.

Agreement activities to date:

Federal Law

The federal Snake River Water Rights Act of 2004 was enacted into law as Public Law 108-447 in November 2004 (see Title X of the Omnibus Appropriations Act, H.R. 4818). It ratifies the SRBA Agreement and authorizes the necessary funding appropriations. Prior to waiving the claims by the US and Tribe, the Act requires an appropriate finding by the Secretary of Interior that: (a) the necessary prerequisite actions have been completed, including issuance of a judgment and decree by the SRBA court from which no appeal may be taken; and (b) the US, the Tribe and the State of Idaho have each determined that all required actions consistent with the Term Sheet have been taken.

From the beginning of the federal legislation, all parties traveling to Congress were told how difficult the task would be to accomplish within the short time required. Many were amazed at how all of the necessary votes and key elements fell into place to bring about passage of the legislation. Idaho's delegation worked as an organized team and, with their federal counterparts, brought forth this unprecedented legislation.

Idaho Legislation

The Idaho legislative effort also proved daunting. The Idaho Farm Bureau vigorously opposed the legislation. Unprecedented hearings were held in both the Idaho House and Senate prior to an overwhelming vote of support by the Legislature. House Bill 152 which ratified and confirmed the Snake River Water Rights Agreement of 2004 (the Term Sheet) was passed and signed into law on March 24, 2005, requiring the Governor's proclamation certifying all conditions of the Term Sheet had been satisfied. In other words, the Legislature wanted to insure that its law was effective only so long as the Term Sheet Agreement was effective.

Nez Perce

Minimum Stream Flows

Bell Rapids Purchase

The Idaho Legislature also passed House Bill 153. This bill extended the right of Bureau flow augmentation for the duration of the Term Sheet Agreement. It was signed by the Governor on March 24, 2005 and made effective from January 1, 2005. It was further corrected by House Bill 399, signed by the Governor on April 14, 2005, which provided that HB 153 should only become effective upon certification by the Governor that the Biological Opinions have been issued as required by the Snake River Water Rights Agreement.

Following extensive work with the Tribe and the State, recommendations approving the minimum stream flows for specific reaches were made by the Idaho Water Resource Board (IWRB). In addition, the Legislature passed House Bill 154 (signed into law by Idaho's Governor on March 24, 2005). This legislation provides for legislatively decreed minimum stream flows for almost 200 streams, some of which have multiple reaches with specific minimum stream protection.

The Nez Perce Tribal Executive Committee approved the Term Sheet Agreement within days of the Governor's signing the Idaho legislation into law.

Since the passing of the federal legislation, the Bureau has signed-on to the rental pool procedures in the Upper Snake River above Milner. These procedures establish under what conditions flow augmentation water would be available to rent to the Bureau (dependant on weather and storage conditions).

Effective May 10, 2005, IWRB entered into a purchase agreement (the "Bell Rapids Project") to acquire up to 74,119.5 AF per annum of water useable for flow augmentation from "high lift" water rights below Milner and above Swan Falls. "High lift" refers to the existing rights which had to be pumped a considerable distance up from the Snake River canyon to serve irrigation purposes on the higher-altitude Snake River plain. Sixty thousand AF of these water rights are intended to be leased to the Bureau under a long-term prepaid lease. This lease's revenue will reimburse the IWRB for a substantial amount of the cost it has incurred to acquire the 60,000 AF allowed to be leased or acquired by the Bureau under the Term Sheet. IWRB recently finalized the purchase of most of the Bell Rapids water (press release at IDWR website: www.idwr.idaho.gov/about/rels2005/2005-53.pdf). The total price paid by IWRB will be up to $24.375 million should it acquire all of the useable water rights. The money was appropriated up-front by the Idaho Legislature to insure that title to the water continues to be held by the State of Idaho and only leased to the Bureau. The Bureau and IWRB are presently negotiating the terms of this lease.

The Supreme Court of Idaho has recently remanded the Nez Perce appeal back to the SRBA court pursuant to its order of June 27, 2005. Hearings are now being held on motions made by the parties to the Term Sheet asking the SRBA court for approval of a Consent Decree consistent with the Term Sheet.

CONCLUSION

Although much has been accomplished to implement the actions required of the parties and others under the Term Sheet, much more work lies ahead before this matter can be finalized. The full implementation of the Upper Snake Biological Opinion has yet to occur. All parties recognize that even if the Opinion comports with the Term Sheet, judicial challenge to the Opinion will most certainly proceed in Judge Reddin's court (US District Court in Oregon). There will undoubtedly be an update to this article written by those following this case.

Whether-or-not a Biological Opinion on the Upper Snake based upon the Term Sheet survives for only five years or for the full thirty years, many believe that it was a risk worth taking in order to provide some certainty to Idaho's future as it relates to its most precious resource: it's water. To have proceeded with the Nez Perce appeal and won would have provided little more then what will occur at a minimum under the Term Sheet — i.e., the Nez Perce instream flow claims in the Snake River will be forever gone and threaten Idaho and its water users no more.

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Idaho Department of Water Resources - Nez Perce Agreement website: www.idwr.state.id.us/nezperce/index.htm

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Mr. Rigby presently serves as the chairman of the Idaho Water Resource Board, having been appointed to that position by Governor Batt in January of 1995 and reappointed by Governor Kempthorne in 1999 and again in 2002.

Climate Change

Instream Flows

Watershed Planning

Exempt Wells

Instream Impacts

Drought Declaration

Drought Wells

Leasing

"Reverse Auction"

CLIMATE CHANGE & WASHINGTON WATER LAW

by David C. Moon, Editor

On May 19 and 20, 2005, the 14th Annual Washington Water Law Conference was held in Seattle, with the focus on "the way the system involves to address changes" that are occurring in water use, according to Matt Wells of Preston Gates LLP. The Law Seminars International conference provided an array of excellent speakers who discussed where Washington and, indeed the West, must go given increasing competition for limited resources and the impacts of climate change.

Jay Manning, Washington's new Director of the Washington Department of Ecology ("Ecology" — the agency that handles both water rights and water quality in the state), spoke on "What's Next for Washington Water Law." Manning noted that the legislature made a policy decision that Washington should maintain its rivers with base flows (instream flows), and do so without upsetting senior water rights already in existence.

In a presentation before the Western States Water Council (WSWC) on July 15, 2005 in Seattle, Manning pointed to "watershed planning" as the way to set and meet the instream flows. He gave an example of a "watershed group in one area that has come up with robust flows that agricultural interests have bought into" using the watershed planning approach. In the Walla Walla River basin, the group has come up with an instream flow target to be achieved, since the river is over-appropriated from use in both Washington and Oregon. According to Director Manning this represents a "fundamental retrofit of the Prior Appropriation Doctrine" that is moving to a "share the gain, share the pain system." He also noted that Tribal participation is a key to success in watershed planning, particularly due to the fact that tribal interests have instream flow components that are largely unquantified.

In part of his keynote address to the Washington Water Law conference, Manning frankly pointed out that in setting "base flows" there will be not only technical and scientific questions, but also political issues, affecting the process. Manning said that there will probably be the need for a "range of flows" with a watershed-based group deciding where to set the amount. "It's not a one-time decision that can never be changed."

An issue that is receiving attention in many western states is "exempt wells." In Washington "exempt ground water withdrawals" are exceptions to the normal water right permitting requirement, allowing ground water use of 5,000 gallons/day for stockwater, single or group domestic purposes, industrial purposes, and watering lawn or non-commercial garden that is not larger than one-half acre. See Ecology website: www.ecy.wa.gov/biblio/971801wr.html

Director Manning noted that Washington's exempt wells are unregulated and "are eating up instream flows." (WSWC, 7/15/05). In answer to a question regarding regulation of "exempt wells" at the water law conference, the Director first pointed out "instream flows are just like any other rights with a priority date." He then stated that "exempt wells don't have a water right" and although "we have well logs to tell us when they were drilled, we don't know when use first began," so this year's regulation "probably doesn't involve cutting off exempt use." Manning went on to say that "exempt wells have acted like a big, political relief valve, but also like an unmonitored drain on the system. It's a fallacy to pretend that exempt wells have no impact on the system. If we take away the relief valve, then political heat goes up dramatically." Manning concluded, however, by saying "exempt wells have got to be brought into the system, monitored and controlled."

Washington is currently dealing with a serious drought that resulted in a drought declaration by Governor Christine Gregoire. The declaration allows easier transfers of water and made $10 million available (primarily to lease water from willing water right owners). If transfers are temporary and drought-related, Ecology will process the application within 15 days. See Ecology's drought website: www.ecy.wa.gov/programs/wr/drought/2005/drthm.html. Manning predicted that August and September flows would reach all-time lows and noted that water rights junior to instream rights in the Chehalis basin may be regulated off for the first time ever. Ecology is currently collecting information to help with decisions in that basin.

Manning specifically mentioned two drought actions in his WSWC talk. First, new emergency drought wells to replace surface supplies are required by statute to be permitted within 15 days by Ecology, and secondly, drought-prompted water leasing in the Yakima Basin resulted in obtaining replacement water for approximately 200 water users. This relief through leasing has mainly flowed from agricultural use to domestic use. The community of Rosland is one prominent example, Ken Slattery (Acting Program Manager, Ecology Water Resources Program) informed The Water Report. Slattery further noted that the leasing this year in the Yakima Basin involved a "reverse auction" where Ecology solicited leases from water users who would then send in their proposals. This allowed Ecology

Climate Change

Drought Relief

"Water Exchange"

Instream Rules

Storage

Black Rock Project

Regional Planning

Effects

"Solutions"

More Transfers

to review the water rights involved, as well as the asking price, to come up with the needed water. In addition to providing relief for this year, Slattery said that the reverse auction helps establish the value of water rights for the future in Washington.

In addition to new emergency drought wells, the drought declaration allows previously drilled emergency wells to be used and allows temporary permits to be issued to expand the capacity of, or allow alternative uses, from existing wells. In total, approximately 127 drought-related approvals for emergency wells and transfers have occurred this year, Slattery noted. Ecology's website also maintains a "Water Exchange" site where users can post water available and water needed to facilitate exchanges (www.ecy.wa.gov/programs/wr/drought/2005/drt_wtrxchng_table.html).

The state is in the midst of developing water management rules as the vehicle to create "instream flows" to provide base flows for specific streams. Director Manning said that the Department of Ecology (Ecology) is on track to adopt 11 instream flow rules by the end of this year and seven next year. For details on Washington's instream flow program see Ecology website: http://www.ecy.wa.gov/programs/wr/instream-flows/isfhm.html. Manning pointed out that the "next frontier" is actually maintaining instream flows in streams where needed flows are not currently met.

Water storage issues are again receiving serious attention from decision-makers and stakeholders throughout the West. "We'll have to catch precipitation and store it somehow," Manning said, identifying storage as one of the "proactive solutions" needed to "expand the pie" of water resources. Whether it be surface reservoir storage or aquifer storage, "it has to be part of the solution," according to Manning. Given the enormous costs of storage, Manning noted some prerequisites:

- All the stakeholders must agree on a project (water users and environmental groups)
- Storage must be multi-purpose (benefiting instream values and out-of-stream uses)
- Must be off-stream to prevent blockage of fisheries' migrations

The Black Rock Project, with an approximate price tag of $4 billion, was noted by the Director as one that will be interesting to watch due to the expense and controversy surrounding it. In his WSWC presentation, Manning said that for "multi-purpose projects we need a new funding source. We must take it to the people," perhaps in the form of a bond issue.

The Bureau of Reclamation (Bureau) is beginning the "Yakima River Basin Water Storage Feasibility Study" to examine the feasibility and acceptability of storage augmentation in the basin, with the initial emphasis on accumulating data and information on the Black Rock option. For information on that study, see the Bureau website: www.usbr.gov/pn/programs/storage_study/index.html.

CLIMATE CHANGE AND GLOBAL WARMING

At the end of the Conference's first day, David Montie (King County Department of Natural Resources and Parks), Chris Pitre (Golder Associates) and Joe Stohr (Ecology) discussed "Regional Water Supply Planning." Leading off, Montie raised the specter of global warming as "fascinating and scary" and went on to discuss a "modest proposal" concerning regional planning to deal with supply issues. King County and the Cascade Water Alliance, a consortium of water utilities, recently entered into a **m**emorandum **o**f **u**nderstanding (MOU) to develop a water resource and supply for the entire King County. Federal Endangered Species Act needs along with the State's "Growth Management Act" are the current drivers of the proposal. Regional climate change implications are becoming better known and Washington's severe drought provides the impetus, according to Montie. Montie pointed to three areas of local evidence of climate change: declining snowpack, shifts in the timing of runoff, and a declining trend on overall runoff volume.

Chris Pitre continued the theme, stating unequivocally "climate change is real" and will bring with it changing flow regimes and weather that is "more extreme, more variable and less predictable." Pitre believes that we will see wetter, shorter winters (with increasing rain, decreasing snow). This will result in stormwater management becoming even more important. We will also see less precipitation in the drier, longer summers and more evapotranspiration. As summer demand goes up, conservation measures will become more critical, Pitre said. The "solutions" to the impending change, Pitre listed, are stormwater management, reclaimed water use, and storage of water by both aquifer storage recovery and surface water reservoirs. In addition, a regional water supply will provide benefits through: public sector control; conservation; creativity; and holistic management.

Joe Stohr provided Ecology's outlook on Water Planning and Management, reiterating many of the same points that Director Manning started the conference with. Stohr pointed out that recent legislation has led to a focus on water right changes and transfers, as opposed to new water right applications. The numbers of "change applications" are rising, overwhelming the numbers of new water right applications that are dropping dramatically.

Climate Change

"Interruptible" Water Rights

Stohr discussed Washington's move to protect instream flows. By determining how much water is required for instream uses, Ecology can decide if water is available for new uses and close streams to appropriation when water is not available. Ecology plans to allow new uses, but limitations on use can be expected such as "interruptibility for new rights" Stohr said. "Interruptible water rights" are interruptible during low flow conditions in order to retain water in the river.

Approximately 330 "interruptible" water rights were previously issued on the Columbia River mainstem subsequent to the adoption of an instream flow rule for the river in 1980. For those rights, Ecology has agreed to propose a water use efficiency program that would provide existing water right holders with an option to convert their currently interruptible water right to an uninterruptible water right, through the Columbia River Initiative rule-making process.

Uninterruptible Status

Under the terms of a legal settlement with the Columbia Snake River Irrigators Association (CSRIA), the Department of Ecology agreed to propose a rule that would offer an option for water users, with water rights issued after 1980, to convert their water rights to an uninterruptible status. In order to obtain a water right that is not subject to instream flow, the water user must either:

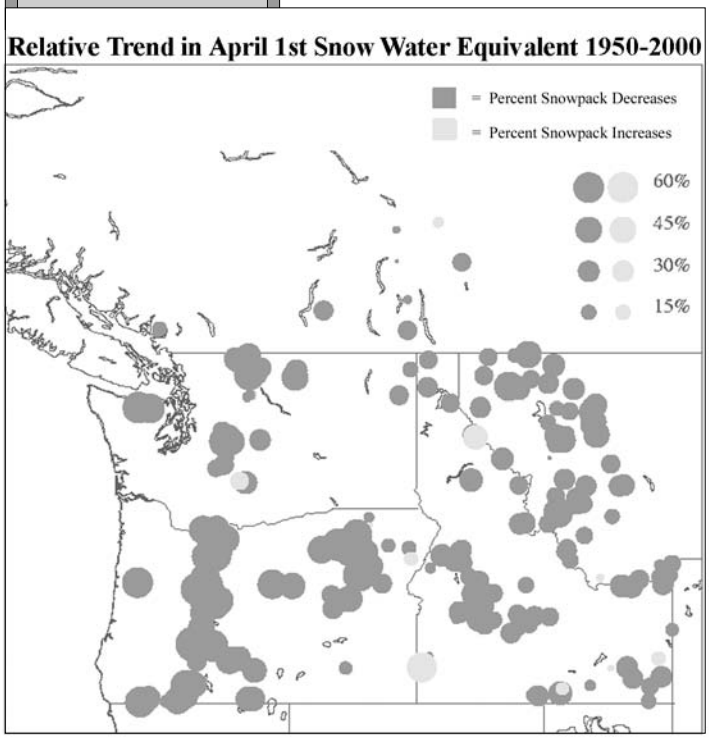
1. Pay an amount per acre foot per year for the full amount of water to be used under each permit that would be converted; or
2. Meet best management practices for interruptible rights and transfer the conserved water to Ecology. Participants would also be required to submit all of their existing water rights, whether interruptible or not, to review by Ecology to reflect actual beneficial use. Participation in this water use efficiency program would be entirely voluntary. Water users that choose not to participate would see no change in their existing water rights.
   See Ecology website: www.ecy.wa.gov/programs/wr/cri/cribmps.html

Active Management

In order to provide for water for future needs, Stohr noted that Washington would rely on active management measures.

SUCH MEASURES INCLUDE:

- Purchasing and transferring existing water rights
- Connecting to existing water systems that have excess capacity
- Implementing conservation, efficiency, and reclaimed water measures
- Using conservation-oriented water pricing
- Using "interruptible water rights," water reservations, trust water rights and water banking
- Developing surface and aquifer storage & conjunctive use projects
- Limiting water use to priority needs
- Site/Attract projects that avoid or minimize effects
- Move point of effect far downstream, divert larger streams
- Regulate future well construction & replace shallow wells with new deeper wells



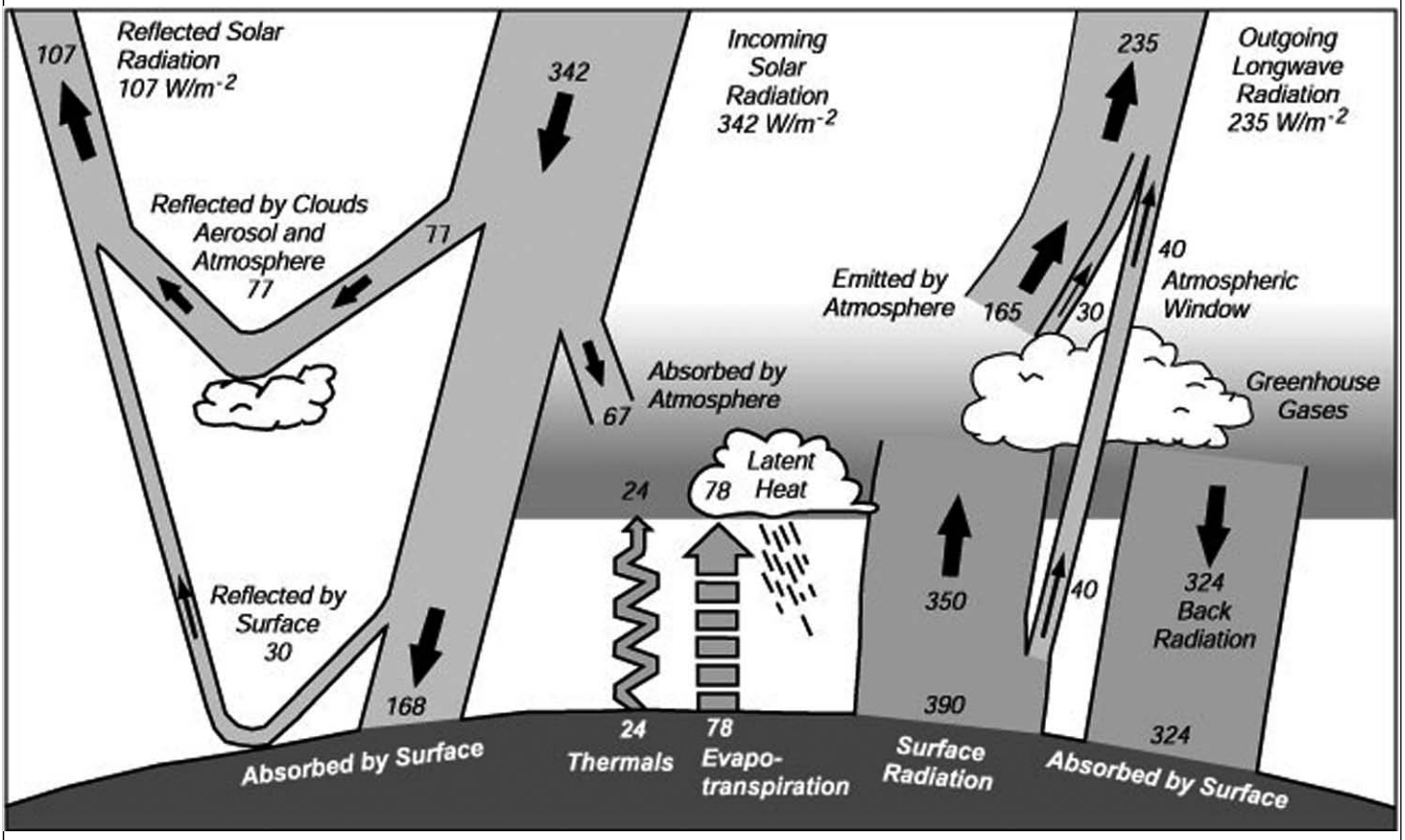
Another Conference panel dealt with "What Are the Impacts of Climate Change on the Pacific Northwest." Philip Mote, PhD (Washington State Climatologist), Alan F. Hamlet, and Dr. Edward Miles, all of the Climate Impacts Group (CIG) from the University of Washington provided a sobering account of the current trends in global warming focusing on impacts in the Northwest. CIG is an interdisciplinary research group studying impacts of natural climate variability and global climate change ("global warming") on the Pacific Northwest (PNW). CIG's research focuses on four key sectors of the PNW environment: water resources, aquatic ecosystems, forests, and coasts.

Dr. Mote began his presentation by stating unequivocally that the "West has warmed," and providing various temperature and snowpack data that show statistically significant changes occurring at many stations, with others showing warming trends (but not statistically significant). The map to the left, taken from CIG's website, shows the relative trend in April 1st snow water equivalent (1950-2000). It illustrates how the Northwest's "natural reservoir" system (snowpack) is experiencing tremendous decreases. April 1st readings are widely accepted as the best indication of reliable water supplies that can be expected from snowpack. Dr. Mote said that 75 percent of the areas showed decreases in a comparison of 1950 to 1997.

Climate Change

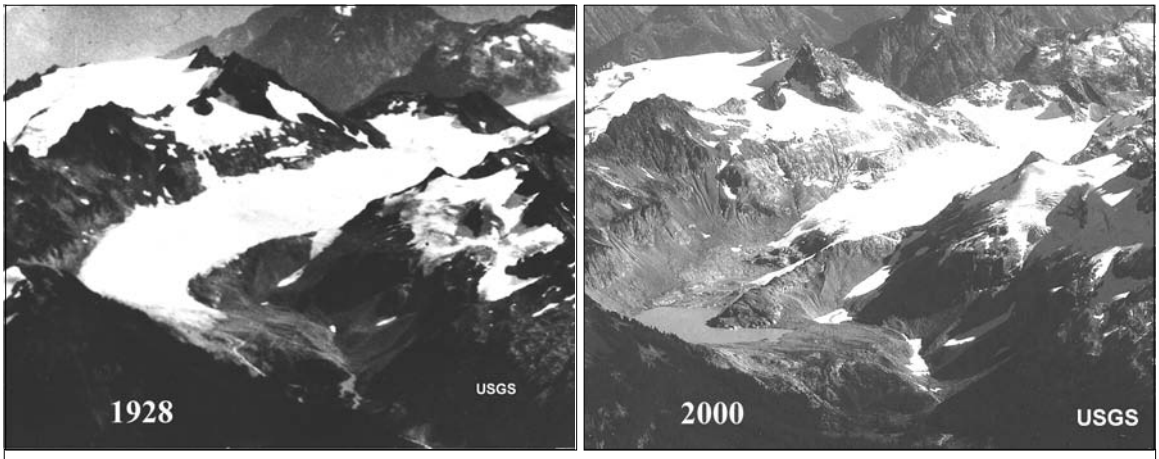
Understanding how global warming is occurring is illusive for those of us who aren't scientists. Mote provided an excellent chart that shows the mean annual radiation and heat balance of the earth (see "Earth's Radiation Budget"—below). The values listed in the chart give an overall rating of the relative importance of different contributing factors.

Earth's Radiation Budget



From Houghton, et al (1996:58), using data from Kiehl and Trenberth (1996)

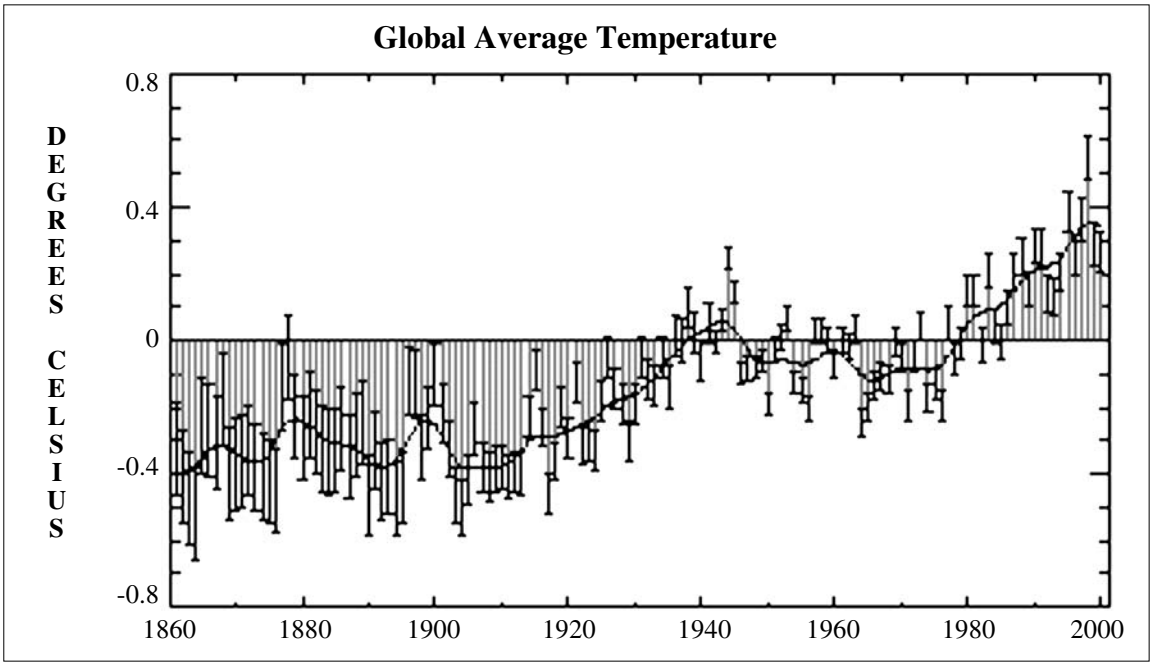
The warming trend and its impact on the Northwest's glaciers was vividly demonstrated by a slide shown by Mote comparing a picture of the South Cascade glacier in 1928 versus the same glacier in 2000 (see below).



South Cascade Glacier in 1928 and 2000

Climate Change

Another alarming graph, pulled from the CIG website from an earlier presentation by Mote (5/14/2004), shows the "Global Average Temperature" trend from 1860 to 2000.



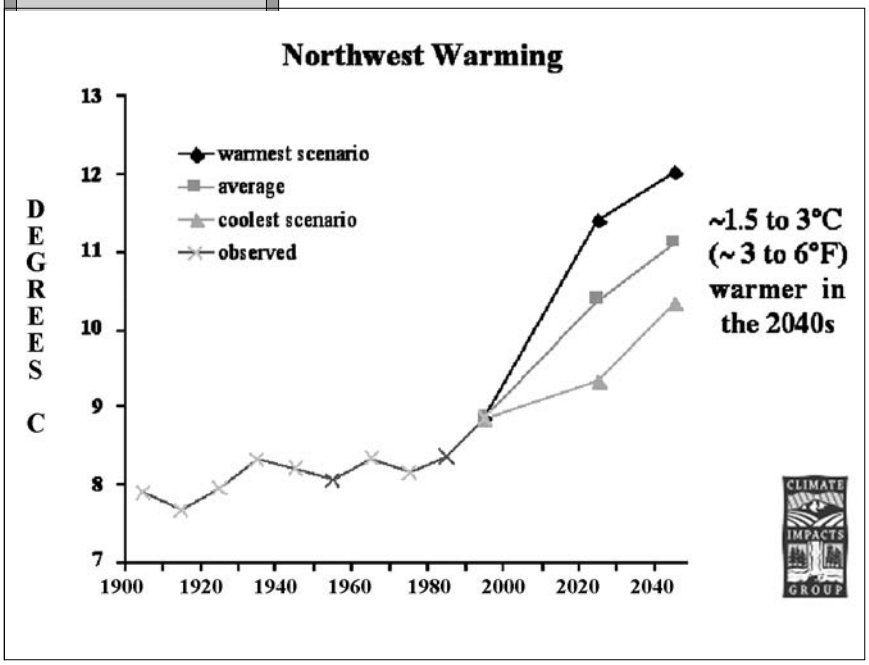
Conservative Projections

CIG "wanted to be conservative" regarding projections of warming scenarios, according to Mote. Ultimately for the Northwest, CIG's predictions are encapsulated in the graph of Northwest Warming that shows three possible scenarios ranging from an increase of 3-6 degrees Fahrenheit (1.5 to 3 degrees Celsius; see graph below). Following his presentation, the question was asked, "Given all this, do we adapt or prevent the global warming?" Mote answered that the "earth is committed to warming for the next 50 years [due to increases already built into the system] so we must adapt. But we still must tromp on the brakes to prevent more changes beyond 50 years."

Adapt or Prevent

Alan Hamlet of CIG (and the Joint Institute for the Study of Atmosphere and Ocean) dealt in more detail regarding the hydrological impacts of global climate change. The major impact for the Northwest will be the loss of snowpack. The most sensitive areas are coastal mountain ranges with relatively warm winter temperatures such as the Cascades. Simulations run by CIG show, for example, that a 2.5 degree Celsius rise in temperature (predicted for the 2040s) would result in a 58 percent loss of snowpack.

Snowpack Loss



Hamlet observed that global warming will probably result in both "warm and wet" conditions (in the winter) and "warm and dry" conditions (in the summer) based on the historic records for the 20th Century. Hence, the need to plan for both scenarios. Hamlet concluded with a summary of the hydrologic changes associated with global warming: earlier and reduced peak snowpack, increased stream flows in winter, earlier and reduced spring and summer runoff, and decreased stream flows in late summer.

Dr. Edward Miles, of the School of Marine Affairs at the University of Washington and CIG, addressed vulnerability and residence in the Post-2020 world in addition to discussing management challenges in the Pacific Northwest. Referring to global warming skeptics who want to see actual impacts before tackling the problem, Dr. Miles said "By the time we see impacts, we run the risk of causing problems that cannot be reversed by humans" due to the resident lifetimes of various greenhouse gases.

Climate Change

Storage

Options

Studying regional impacts of temperature and precipitation changes led Dr. Miles to say, "small changes in precipitation and temperature have very large impacts." Not all impacts are negative, although most will be. For example, higher stream flows in winter increases the potential for more hydropower production. The dilemma for the Pacific Northwest in particular is that our system is designed to store water primarily in the snowpack: despite the large reservoirs that currently exist, reservoir capacity is only 30 percent of current total annual streamflow. "Where is the new storage?" Miles asked.

Looking only at increasing water scarcity and conflict expected by 2020, "the system is already taxed" and the "Region is in severe difficulty even if the climate doesn't change" Miles said. He believes that "we have to do a regional risk assessment…in partnership with everybody" to prepare and adapt for the future. Dr. Miles set out several options for "Buying Insurance" including:

- Seek flexibility and efficiency of water resources system as a whole
- Consider regionalizing approaches already adopted by Idaho:
  - Joint reservoir management extending the domain to the entire basin
  - Create mechanism to determine natural flow/storage right allocation for entire basin
  - Facilitate collaboration between all stakeholders via water banking and rental pools
  - Move toward conjunctive management of surface and groundwater
  - Control growth in demand via regulations and incentives
- Reconsider stormwater/wastewater infrastructure supply in face of changed conditions
- Consider probability and direction of regional climate change as a risk management problem
- Direct US Army Corps of Engineers to revise its long-range plans in its operations manual for the Columbia River to consider scenarios of regional climate change
- Support development and maintenance of a comprehensive regional climate monitoring system
- Push for a regional/federal discussion on policy dimensions of climate change and water resources

For Additional Information: David Moon, The Water Report, 541/ 343-8504
Climate Impacts Group: 206/ 616-5350, or website: www.cses.washington.edu/cig/;
Webtool for Simulations, see website: www.ce.washington.edu/~hamleaf/climate_change_streamflows/CR_cc.htm

David C. Moon is a sole practicioner of water law in Eugene, Oregon with the Moon Firm. He previously practiced in Bozeman, Montana with Moore, Refling, O'Connell & Moon. He is currently an editor of The Water Report. Mr. Moon received his undergraduate degree at Colorado College and his JD at the University of Idaho Law School. He is a member of the Oregon, Idaho and Montana Bars. Moon has practiced water law for over 25 years in Montana and Oregon, and is currently Co-editor for The Water Report.

WATER BRIEFS

SALMON RECOVERY PLAN WA

PUGET SOUND DRAFT

NOAA has accepted a draft recovery plan for Puget Sound Chinook submitted by Shared Strategy for Puget Sound. The plan covers an area from the Canadian border to Mount Rainier and from the Cascade Mountains to Neah Bay on the Olympic Peninsula. The head of NOAA, retired Navy Vice Admiral Conrad C. Lautenbacher Jr., said that the draft recovery plan for Puget Sound Chinook is an "historic accomplishment." At a July 7 event in Seattle celebrating the event, Lautenbacher said the plan "represents President Bush's vision for salmon recovery coming to fruition. The President's goal was to develop region-wide recovery plans from the ground up, relying on those at the local level who are closest to the issue and who best know how to fix the problems…"

The Endangered Species Act (ESA) requires NOAA Fisheries Service to produce recovery plans. This draft plan represents broad salmon recovery interests in the region and is part of a what will be a dozen or more watershed-level recovery plans that will eventually form the foundation for NOAA's own comprehensive, regional plan for salmon and steelhead in the Northwest. In a Federal Register notice of July 7, NOAA announced its intent to develop recovery plans for 16 Ecologically Significant Units of Pacific salmon and steelhead in the Northwest listed as threatened or endangered under the ESA and requested information from the public. The Region is working with state, federal, tribal and local entities in Washington, Oregon and Idaho to produce draft recovery plans by December 2005. Comments must be received by Sept 6, 2005.
For info: Jeff Donald, NOAA, 202/ 482-4640, or NOAA website: www.nwr.noaa.gov;
Shared Strategy, 206/ 447-3336, or website: www.sharedsalmonstrategy.org/

WATER BRIEFS

SALMON SPILL ORDER NW
9TH CIRCUIT UPHOLDS

"As part of the modern cycle of life in the Columbia River System, each year brings litigation to the federal courts of the Northwest over the operation of the Federal Columbia River Power System…and, in particular, the effects of system operation on the anadromous salmon and steelhead protected by the Endangered Species Act." *National Wildlife Federation, et al v. National Marine Fisheries, et al.*, Case No. 05-35569, Slip. Op. 6-7, (July 26, 2005). The Federal Columbia River Power System (FCRPS) consists of 14 sets of dams and related facilities in the Columbia River system.

The 9th Circuit upheld the federal district court's preliminary injunction in most respects, and remanded to the district court the question of whether the injunction should be more narrowly tailored or modified. The three-judge panel ruled unanimously that the district court judge "did not abuse" his discretion in issuing the preliminary injunction, which required the United States to pass a specified amount of water through the spill gates of four dams on the Snake River, and one dam on the Columbia River during the summer months of 2005, rather than passing the water through turbines for power generation (see TWR #16, Moon, regarding the district court's order). In its discussion of the main factual issue involved (fish mortality), the opinion noted that "The government's own recent data show that between 78-92% of juvenile salmon migrating in the fall are killed by operation of the dams even with use of mitigating measures, with a mean estimated kill of 86% of the migrating salmon." *Id.* at 23.

The opinion provides an excellent summary of the case's machinations. The decision was based largely on the limited appellate review for a preliminary injunction issued as part of an Endangered Species Act case. "The traditional preliminary injunction analysis does not apply to injunctions issued pursuant to the ESA. *Nat'l Wildlife Fed'n v. Burlington N. R.R.*, Inc., 23 F.3d 1508, 1510 (9th Cir. 1994)." *Id.* at 20. "As the Supreme Court has noted, 'Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities.' *TVA v. Hill*, 437 U.S. 153, 194 (1978). Accordingly, courts 'may not use equity's scale's to strike a different balance.' *Sierra Club v. Marsh*, 816 F.2d 1376, 1383 (9th Cir. 1987); see also *Marbled Murrelet v. Babbitt*, 83 F.3d 1068, 1073 (9th Cir. 1996)…" *Id*. at 21.

The 9th Circuit rejected the argument of the federal appellants that the district court should have conducted a traditional preliminary injunction analysis. The appellate court also rejected the argument that the district court should have weighed economic harm to the public in reaching its conclusion. Bonneville Power Administration (BPA) estimated that spilling the water, rather than running it through turbines for electricity, would cost $67 million in lost revenue.

The 9th Circuit held that the district court was not required to defer to agency expertise: "As the district court noted, NMFS had completely reversed course in its 2004 BiOp, particularly in its statutory interpretation of the environmental baseline. 'An agency interpretation of a relevant provision which conflicts with the agency's earlier interpretation is "entitled to considerably less deference," than a consistently held agency view.' *INS v. Cardoza-Fonseca*, 480 U.S. 421, 446, n. 30 (1987) (quoting *Watt v. Alaska*, 451 U.S. 259, 273 (1981)). The district court had rejected the underlying premise of the agency's methodology and the 2004 BiOp. Therefore, there was no formal agency finding to which deference might arguably be owed. Rather, the government chose to present its case through expert affidavit." *Id*. at 33.
For info: 9th Circuit opinion and pleadings can be downloaded at the 9th Circuit's website: http://www.ca9.uscourts.gov/; Steve Mashuda, Earthjustice, email: smashuda@earthjustice.org, or website: www.earthjustice.org; Federal Caucus website: www.salmonrecovery.gov/

CWA FINE CA
WETLANDS DUMPING

The US Environmental Protection Agency (EPA) has fined a Galt, California developer $47,500 for dumping dredged and fill material without a permit into Cosgrove Creek, its tributaries, and wetlands in the Calaveras River watershed. CRV Enterprises and company owner Ryan Voorhees agreed to protect and preserve 14 acres of similar habitat in the project vicinity (purchase of 6 acres worth of credits from a wetland mitigation bank and permanently preserving 8 acres of Cosgrove Creek at the violation site). The company will also maintain a 75-foot no-build habitat buffer zone around Cosgrove Creek tributaries while seeking permit authorization from the Corps of Engineers. In June 2004, EPA inspected the residential development site at the request of the Corps of Engineers and found that CRV Enterprises/Voorhees had used heavy equipment for grading, compaction and filling activities to fill areas in the creek and adjacent wetlands. Approximately 3 acres were filled without permits from the Corps.
For info: Margot Perez-Sullivan, EPA, 415/ 947-4149, or website: www.epa.gov/region09/water/wetlands/index.html

NEBRASKA GROUNDWATER
AUTHORITY TO REGULATE

The Nebraska Supreme Court recently handed down two cases dealing with the jurisdiction and authority to regulate groundwater use to protect surface water users. On July 1, in *In re Complaint of Central Neb. Pub. Power*, Case No. S-04-836, 270 Neb. 108, the court held: "We conclude that the Department [of Natural Resources] has no independent authority to regulate ground water users or administer ground water rights for the benefit of surface water appropriators. We do not address what relief, if any, Central might obtain under § 46-701 et seq. This conclusion is clearly supported by our decision in *Spear T Ranch v. Knaub*, *supra*, in which we declined to apply

WATER BRIEFS

legislatively created surface water priorities to ground water use for the reason that no statutory authority or case law supported the rationale of applying the rules relating to surface water appropriations to ground water use. We recognized that the Legislature has not developed an appropriation system that addresses direct conflicts between users of surface water and ground water that is hydrologically connected. We noted that the lack of an integrated system was reinforced by the fact that different agencies regulate ground water and surface water." *Id*. at 117-118.

The court left no doubt that DNR only has authority to regulate surface water users (see Neb. Rev. Stat. § 61-201 et seq. (Reissue 2003 & Cum. Supp. 2004), while the Natural Resources Districts (NRD) have responsibility for groundwater pumping through the Nebraska Ground Water Management and Protection Act, see Neb. Rev. Stat. § 46-701 et seq. (Reissue 2004).

The court relied heavily on its determination that the "Nebraska Constitution does not address the use of ground water." *Id*. at 117. In 1920, the Nebraska Constitutional Convention amended the Constitution Art. XV, §§ 4 through 6, to mimic previously enacted legislation from 1895. Sections 5 and 6 both used the term "natural stream."

The second case (issued July 8) is *Spear T Ranch v. Nebraska Dept. of Nat. Resources*, Case No. S-04-639, 270 Neb. 130. Spear T sued DNR for damages resulting from the failure to regulate groundwater users. The court held that because DNR had no duty to regulate groundwater users DNR could not be held negligent, relying on its *CNPP* decision and its earlier decision in *Spear T Ranch v. Knaub*, 269 Neb. 177, 691 N.W.2d 116 (2005). See TWR #13, Water Briefs. "We conclude that the Department has no common-law or statutory duty to regulate the use of ground water in order to protect Spear T's surface water appropriations…In the absence of independent authority to regulate the use of ground water, the Department has no legal duty to resolve conflicts between surface water appropriators and ground water users. If there is no legal duty, there is no actionable negligence. *Fuhrman v. State*, 265 Neb. 176, 655 N.W.2d 866 (2003)." *Id*. at 138.

The question of responsibility or liability of the Natural Resources Districts for failing to regulate groundwater pumping to protect surface water users remains unanswered. Meanwhile, last year Nebraska's legislature passed LB 962 to address the issue of groundwater/surface water conjunctive use. LB 962 enables DNR to examine river basins and declare them fully appropriated and if so, DNR and NRD must then develop an integrated resources plan.

For info: Dave Vogler, DNR, 402/ 471-2363; *CNPP* and *Spear T* cases can be viewed at the Nebraska court website: http://court.nol.org/opinions/

NONPOINT SOURCES AZ

ARIZONA GRANTS

Arizona's Department of Environmental Quality is requesting applications for funds under the Water Quality Improvement Grant Program. Eligible projects are those that implement on-the-ground water quality improvements to manage nonpoint source pollution. Approximately $1.5 million is available. Each applicant must provide 40 percent matching funds. The funds are provided by section 319(b) of the Clean Water Act, administered by the US EPA. The deadline to submit grant applications is 3 p.m., October 5. The 2004-2007 Water Quality Improvement Grant Manual, which includes information about the grant program and applications, can be downloaded from the website listed below.

For info: Water Quality Improvement Grant Program website: www.azdeq.gov/environ/water/watershed/fin.html.

WASTEWATER TREATMENT ID

EPA PENALTY

EPA announced July 19 that Gooding, Idaho reached a $7500 settlement with the US Environmental Protection Agency (EPA) for 521 violations of effluent limitations for their wastewater treatment plant (NPDES Permit under the Clean Water Act). Gooding was facing civil penalties in the amount of $157,500 for the violations. EPA's announcement said they are focusing attention on priority watersheds where facilities are discharging wastewater to rivers and streams that are already at their limits to receive certain pollutants. In this case, the facility received several warnings, both written and verbal, during the past several years. Violations at the plants routinely exceeded their permit limits for chlorine, biological oxygen demand (BOD), fecal coliform, and ammonia. Jim Corpuz of EPA informed The Water Report that the city has upgraded their system, spending $52,000 to replace a failed pond liner in their sewage lagoon and spending an additional $61,400 on other upgrades.

For info: Jim Corpuz, EPA, 206/ 553-1200 or David Domingo, EPA, 206/ 553-0531 or email: domingo.david@epa.gov, or website: http://cfpub.epa.gov/compliance/newsroom/

ESA REPORT ONLINE US

RECOVERY PROGRAM

NOAA Fisheries' Office of Protected Resources has issued the 2002-04 Biennial Report to Congress on the Recovery Program for Threatened and Endangered Species. Required by section 4(f)(3) of the Endangered Species Act (ESA), this report summarizes efforts to recover all domestic ESA-listed species under the jurisdiction of NOAA Fisheries Service. The report includes accounts of each species, including its status, current threats, conservation actions undertaken during the two-year reporting period, and priority actions needed. The Report is posted online.

For info: NOAA website: www.nmfs.noaa.gov/pr/publications/biennial.htm

CALENDAR

August 15 **WA**

Water Resources Advisory Committee (WRAC) Meeting, Lacey, Ecology Hdqrters, 300 Desmond Drive. RE: Water Resource Management and Strategies (Agenda Varies). For info: Curt Hart, Ecology, 360/ 407-7139, email: char461@ecy.wa.gov, or website: www.ecy.wa.gov/programs/wr/wrac/wrachome.html

August 15-16 **NM**

New Mexico Water Law 13th Annual, Santa Fe, Eldorado Hotel, 309 West San Francisco. RE: Pecos River Adjudication and Compliance, EPA Trading Policy, 2004 Triennial Review, Water Quality Standards. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

August 16 **WA**

Salmon Model Evaluation Workgroup, Olympia, Northwest Indian Fisheries Commission Conference Room , 9am-4pm. RE: Pacific Fishery Management Council's SMEW Work Session on Chinook and Coho Fishery Regulation Assessment Models. For info: Chuck.Tracy@noaa.gov

August 16 **NM**

New Mexico Water Research Symposium, "Advances in Hydrology: Methods and Instruments, Socorro. RE: Water Quality & Security, Geomorphology, Water Management & Policy. For info: New Mexico Water Resources Research Institute, Catherine Ortega Klett, 505/ 646-1195, or website: http://wrri.nmsu.edu/conf/confsymp.html

August 17 **WA**

Safe Drinking Water Act Conference, Seattle. For info: Law Seminars International, 800/854-8009, website: www.lawseminars.com

August 18-19 **AZ**

Arizona Water Law SuperConference 13th Annual, Phoenix. For info: CLE Int'l, 800/ 873-7130, website: www.cle.com

August 18-19 **OR**

Environmental Quality Commission Meeting, Eugene/Springfield, Exact Location TBA. For info: Day Marshall, DEQ Director's Office, 503/ 229-5990; website: www.deq.state.or.us/

August 18-19 **CA**

"Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Assessment, and Remediation," Costa Mesa. RE: Site Characterization and Monitoring, Natural Attenuation Processes, and Remediation Technologies & More. For info: National Ground Water Association, 800/ 551-7379, website: www.ngwa.org

August 19 **UT**

Utah Water Quality Board Meeting, Salt Lake City, Cannon Health Bldg., Rm125, 9:30am. For info: Utah DEQ, 801/ 538-6146, website: http://waterquality.utah.gov/wq_board/wq_board.htm

August 23-24 **CO**

Assessing Riparian Condition Workshop, Grand Junction. RE: Values of Riparian/Wetland Areas, Methods to Assess Conditions, Assistance Options. Sponsored by the Colorado Riparian Training Cadre (interagency, interdisciplinary team). For info: Jay Thompson, Colorado Riparian Cadre Coordinator, 303/ 239-3724 or email: jay_thompson@co.blm.gov

August 23-24 **OR**

Oregon Brownfields Conference, Portland, Hilton Hotel. RE: Managing Liability, Public Involvement, Federal/State Assistance, Redevelopment Approaches (Small & Rural), Understanding Phase I Reports, Phase II & Remediation Design/Implementation. For info: Cara Bergeson (NEBC), 503/ 227-6361 or website: www.nebc.org

August 25-26 **OR**

Contaminant Chemistry and Transport in Soil and Groundwater Course, Portland, Ecotrust Conference Center, 721 NW 9th Avenue, 8:30am- 5pm. Instructor: Erick McWayne, Northwest Environmental Training Center For info: Northwest Environmental Training Center, 206/ 762-1976or email: emcwayne@nweec.org or website: www.nweec.org

August 27-30 **WA**

National Association of Development Organizations 2005 Annual Training, Seattle. For info: www.nado.org/meetings/atc.html.

August 28-31 **CA**

2nd Joint Specialty Conference for Sustainable Management of Water Quality Systems for the 21st Century - Working to Protect Public Health, San Francisco. Sponsored by the Water Environment Federation. For info: www.wef.org/conferences/Wastewater_Technology2005.jhtml

August 28-31 **MO**

White House Cooperative Conservation Conference, St. Louis. For info: www.conservation.ceq.gov/agenda.html.

August 29 **CA**

California Wetlands, San Francisco. For info: CLE Int'l, 800/873-7130, or website: www.cle.com

August 31-September 2 **MO**

Animal Agriculture and Processing: Managing Environmental Impacts, St. Louis, Hyatt Regency. RE: CAFOs, Management Principles & Technology, Strategies & Solutions, Regulatory & Policy Developments. For info: Air & Waste Management Association website: www.awma.org/events/confs/Animal/default.asp

September 7 **AK**

Community Development Opportunities for Alaska Brownfields, Anchorage. Sponsored by NADO and the Alaska Department of Environmental Conservation. For info: NADO, email: knovak@nado.org, or website: www.nado.org

September 7-9 **MT**

11th Annual Water Information Management Systems Workshop, Missoula. Sponsored by Western States Water Council. For info: Tony Willardson, WSWC, 801/ 561-5300, email: twillards@wswc.state.ut.us, or website: www.westgov.org/wswc

September 8-9 **MT**

Montana Agricultural Law Issues, Billings. RE: Legislation, Water Leasing, Irrigation, Adjudication Status, Wetlands, Clean Water Act: Nonpoint Source and Coalbed Methane, ESA, Pesticides, CAFOs, Conservation Easements, Master Planning, Credit, Landowner Liability. For info: The Seminar Group, 800/ 574-4852, or email: Info@TheSeminarGroup.net, or website: www.TheSeminarGroup.net

September 8-9 **OR**

Oregon Fish & Wildlife Commission, Tillamook, 8 am. For info: Cristy Mosset, ODFW, 503/ 947-6044, www.dfw.state.or.us/Comm/schedule.htm

September 8-9 **WA**

Biotechnology Conference, Seattle. For info: Law Seminars International, 206/ 567-4490, website: lawseminars.com

September 8-9 **CO**

Colorado Watershed Assembly Conference: "Plannning for the Future," Glenwood Springs, Hotel Colorado. For info: Chuck, CWA, 970/ 259-3583, email: cwa@coloradowater.org, or website: www.coloradowater.org/assembly.htm

September 8-11 **CA**

National Environmental Convention & Expo - Sierra Club, San Francisco, The Moscone Convention Center. For info: Sierra Club, 301/ 694-5243, or website: www.sierrasummit2005.org/

September 11-14 **NM**

Rocky Mountain Section Annual Conference: American Water Works Association, Albuquerque. RE: Colorado, New Mexico and Wyoming. For info: Website: www.rmwea.org/rmwea/committees/annual_conference/annual.htm

September 11-15 **AK**

American Fisheries Society 135th Annual Meeting, Anchorage. RE: "Creating A Fisheries Mosaic: Connections Across Jurisdictions, Disciplines, and Cultures." For info: Bill Wilson, Planning Committee Chair, 907/ 271-2809, email: bill.wilson@noaa.gov, or website: www.wdafs.org/Anchorage2005/index.htm

September 12-13 **DC**

River Lobby Day 2005, Washington, D.C. RE: Lobbying on Capitol Hill on River Health; Lobby Training on 9/12. For info: Jamie Mierau, American Rivers, 202/ 347-7550, email: jmierau@americanrivers.org or website: www.riverlobbyday.org

September 13 **OK**

Oklahoma Water Resources Board Meeting, Oklahoma City, 3800 N. Classen Blvd., 9:30 am. For info: OWRB, 405/ 530-8800, website: www.owrb.state.ok.us/news/meetings/board/board-mtgs.php

September 13-15 **Canada**

10th Annual International Specialist Conference on Watershed and River Basin Management, Calgary, Telus Convention Center. RE: Water Resources, Impact of Climate Change On Water Resources, Sustainable Urban Drainage, Pollution Sources and Control, Monitoring and Modelling. For info: Charlene Roth-Diddams, 403/ 257-2151 or Email: croth-diddams@shaw.ca

September 14 **CA**

CEQA & NEPA, Santa Monica. For info: Law Seminars International, 800/ 854-8009, or website: www.lawseminars.com/

September 14-15 **ID**

Getting in Step With Phase II: Workshop for Stormwater Program Managers, Boise. Sponsored by EPA (limited to first 100 participants). For info: EPA website: http://cfpub2.epa.gov/npdes/outreach.cfm?program_id=0&otype=1

September 14-16 **ID**

Symposium on the Settlement of Indian Reserved Water Rights Claims, Moscow, University Inn & Conference Center. Sponsored by Western States Water Council and Native American Rights Fund. For info: Tony Willardson, WSWC, 801/ 561-5300, email: twillards@wswc.state.ut.us, or website: www.westgov.org/wswc/meetings.html

September 14-16 **CA**

Basin Yield & Overdraft: Scientific & Legal Perspective, Pasadena, Hilton Pasadena. Sponsored by Groundwater Resources Association of California and International Association of Hydrogeologists. RE: Hydrologic Trend Analysis, Evaluating Groundwater Basin Yield, Perennial & Safe Yield, Subterranean Streams, Surface Water/Groundwater Interactions, Sustainable Management, Field Trip: Raymond Basin on 9/14. For info: GRAC, 916/ 446-3626, or website: http://www.grac.org/

September 14-16 **SD**

South Dakota Section Annual Conference: American Water Works Association, Brookings. For info: American Water Works Association, 303/ 347-0804, South Dakota Section website: www.sdawwa.org/

September 14-16 **KS**

Kansas Section Annual Conference: American Water Works Association, Salina, Salina Holidome. For info: American Water Works Association, 303/ 347-0804, Kansas Section website: www.ksawwa.org/

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September 15-16 NV
Western Water Law 12th Annual, Las Vegas, Riviera Hotel. RE: Municipal, Regional and International Issues from Water Shortages, Strategies for Maintaining Water Quantity and Quality. For info: CLE Int'l, 800/ 873-7130 or website: www.cle.com

September 16 CA
California Environmental Quality Act, Costa Mesa. For info: CLE Int'l, 800/ 873-7130 or website: www.cle.com

September 18-21 CO
"Water Reuse & Desalination: Mile-High Opportunities" WateReuse Symposium, Denver, Sponsored by American Water Works Association and Water Environment Federation. For info: WateReuse Association website: www.WateReuse.org

September 18-21 MD
2005 National Forum on Contaminants in Fish, Baltimore. RE: Chemical Contaminants, Assessing and Managing Health Risks, Bioaccumulation, Updates from EPA and FDA, Risk Communication, Federal and State Monitoring Programs, Updates on Selected Chemicals including PBDEs, Mercury, PCBs, and Dioxin. For info: Jeff Bigler, EPA, (202) 566-0389, email: bigler.jeff@epa.gov, or website: www.epa.gov/waterscience/fish/

September 18-22 NC
13th National Nonpoint Source Monitoring Workshop, Raleigh, Sheraton Capital Center Hotel. RE: Best Management Practices' Effectiveness, Monitoring Techniques, Statistical Analysis of Watershed Data. For info: North Carolina State University website: www.ncsu.edu/waterquality/nmp_conf/

September 18-23 WA
20th Annual Hazardous Materials Management Conference on Household & Small Business Waste, Tacoma, Sheraton Tacoma. Sponsored by: North American Hazardous Materials Managers Association. For info: NAHMMA, 503/ 797-1682, or website: www.nahmma.org

September 18-23 OR
Pacific Fishery Management Council Meeting, Portland, Embassy Suites Hotel Portland Airport, 7900 NE 82nd Avenue. For info: PFMC, 866/ 806-7204, website: www.pccouncil.org

September 19 WA
Water Resources Advisory Committee (WRAC) Meeting, Lacey, Ecology Hdqrters, 300 Desmond Drive. RE: Water Resource Management and Strategies (Agenda Varies). For info: Curt Hart, Ecology, 360/ 407-7139, email: char461@ecy.wa.gov, or website: www.ecy.wa.gov/programs/wr/wrac/wrachome.html

September 19-20 TX
Texas Water Law 15th Annual, Austin, Hyatt Regency. RE: "Water in the 79th Legislature," Updates on Groundwater, Surface Water, Water Supply and Development, Takings Litigation and Vested Rights, Edwards Aquifer and Guadalupe River Basin. For info: CLE Int'l, 800/ 873-7130 or website: www.cle.com

September 19-20 CA
California Energy Markets Conference, San Francisco, Pan Pacific Hotel. For info: Law Seminars International, 800-854-8009 or website: www.clenews.com/LSI/05/05resca.htm

September 19-20 WA
On-Site Wastewater Treatment: Short Course and Equipment Exhibition, Seattle. Sponsored by University of Washington School of Engineering. RE: Advanced Treatment Systems, Innovative Technologies, New Equipment, Current Research. For info: Engineering Professional Programs (UW), 866/ 791-1275, email: uw-epp@engr.washington.edu, or website: www.engr.washington.edu/epp/wwt

September 21-24 AZ
"Conservation and Innovation in Water Management" - 18th Annual Arizona Hydrological Society Symposium, Flagstaff, Radisson Woodlands Hotel. RE: Southwest Water Issues, Regulation, Water Resource Development & Management, Drought Management, Conservation, Stream-Aquifer Interactions, Watershed Impacts, Flow & Transport Modeling. For info: AHS website: www.azhydrosoc.org/symposia.html

September 22-23 AZ
Environmental and Natural Resources Law on the Reservation: Evolving Tribal Governments and Cross-Border Issues, Phoenix, Pointe Hilton Squaw Creek Resort. RE: Water Law, FERC's Policies, Hydroelectric De-Commissioning, Navajo Nation's Clean Air Program, Environmental Justice, Skokomish Case, Teck-Cominco Case, Tribal Right-of-Ways, Power Plant & Large Project Siting. Networking Reception Sponsored by The Water Report and Short Cressman & Burgess. For info: CLE Int'l, 800/ 873-7130 or website: www.cle.com

September 22-23 MT
Montana Section Symposium: American Water Resources Association, Bozeman, Holiday Inn. For info: MT.AWRA, 406/ 994-6690 or website: http://awra.org/state/montana/

September 23 CA
California Environmental Quality Act, San Francisco. For info: CLE Int'l, 800/ 873-7130 or website: www.cle.com

September 23-24 UT
Utah Board of Water Resources Meeting, Ruby's Inn, Location TBA. RE: Tour Escalante/Boulder Area. For info: Molly Waters, 801/ 538-7230, email: mollywaters@utah.gov, website: www.water.utah.gov/board/2004SCHED.asp

September 24-28 OR
2005 Annual Forum: Ground Water Protection Council, Portland, DoubleTree-Lloyd Center. For info: GWPC, 405/ 516-4972, or website: www.gwpc.org/

September 26 UT
Utah Water Quality Board Meeting, Salt Lake City, Location TBA. For info: Utah DEQ, 801/ 538-6146, website: http://waterquality.utah.gov/wq_board/wq_board.htm

September 26-27 UT
Principles of Desalting Brackish and Seawater, Salt Lake City, Hilton Salt Lake City Airport. For info: American Water Works Association, **800/ 926-7337** or website: www.awwa.org/education/seminars/

September 26-30 OR
Across the Great Divides: 20th NW ESRI User/Training Conference, Bend. RE: GIS Training and Conference, Pre-Conference Training 9/27-9/27, Workshops in GPS, ModelBuilder, Python & Other Technical Topics. For info: john@junipergis.com or website: www.nwesriusers.org

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