

## PRESIDENT'S NOTES

by Teresa Platin, CH2M HILL, Inc.

It's just barely spring now, and already it's shaping up to be another newsworthy year in the water profession. The much awaited ESA listing of Puget Sound Chinook salmon should have occurred by the time this newsletter hits local mailboxes; Seattle area precipitation is already ten inches above the normal amount for an average season; and the "Y2K Bug" is capturing headlines in every industry, including water supply and distribution.

The interesting side effect of newsworthy events such as these, is a greater awareness of and curiosity about the water resources profession. I think that what we do is not inherently understood by the average person. It must be nice to be in one of those lines of work where there's no need for a 10-minute discourse to clarify your answer to "what do you do for a living?" My three-year old daughter is quite fond of saying that she is going to "build airplanes" when she grows up (guess where her father works). Although she has been to my office several times, and even went on a simple site visit with me once, I have never heard her utter the words "I'm going to fix stormwater problems when I get big." No glamour in this job, I guess!

It is a complicated profession we are in, and for those who jokingly say "how hard can it be... all you need to know is that water runs downhill, right?", I offer up a suggestion. Read the articles from the water resources experts in this newsletter, keep reading your local newspapers and watching the news on TV. Then, take a moment to wonder what life would be like without people making sure that water does a little more than "run downhill." ☺

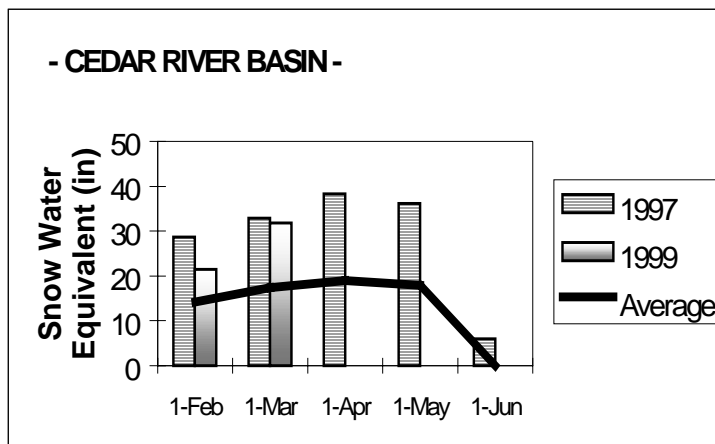
### Upcoming Events

Dinner Meeting  
Wednesday, April 28  
5:30 p.m.  
Don LeMaster,  
TAVA/R.W. Beck L.L.C.

## Will Record Snowpack Lead to Flooding?

by Scott Pattee, Natural Resources Conservation Service

Will this year's record snowpack lead to disastrous flooding in the Pacific Northwest? Washington's record snow accumulation this winter, particularly in the Cascade and Olympic Mountains, is putting state-of-the-art snow survey technology to the test and forcing questions about possible spring thaw flooding problems.



Automated and manual snow survey sites managed by the Natural Resources Conservation Service (NRCS) reported March 1 snowpack readings in excess of 200 percent of average in many locations. Previous snowpack records set in 1997 and 1998 for this date have been met, broken, and even shattered at several sites. For example, at the Mount Crag snow survey site in the Eastern Olympic Range, snowpack was recorded at a record 65.1 inches of snow water equivalent, up from the previous record of 36.2 inches set in 1998.

We have so much snow at many locations that conducting manual snow surveys has been almost impossible. Access has been limited because of deep snow and continual

<http://earth.golder.com/waawra/>

stormy weather. Air and ground transportation has been difficult at best. The incredible snowpack has also caused numerous problems at remote snow survey sites. Too much snow has built up on antennas, solar panels, and precipitation gauges, snow depth sensors and instrument shelters, in some cases breaking and even burying the equipment. We will not know the full extent of damage until the spring thaw.

The NRCS installs, operates and maintains 49 remote automated climate data collection sites, called SNOTEL, in Washington. SNOTEL data is used extensively by emergency management personnel for tracking and predicting flood potential. Reservoir operators govern winter releases according to snowpack information collected in specific watersheds.

Several types of floods occur in Washington. In most parts of western Washington, floods generally occur in late fall and winter as a result of prolonged rainstorms. These floods may be augmented by water from snowmelt if rain falls on snow. In basins at higher elevations, floods may occur in the spring as a result of rapid snowmelt.

Western Washington is particularly vulnerable to flooding caused by rain-on-snow events. Heavy rains accompanied by warm temperatures are regularly driven into the Olympic Mountains and west slopes of the Cascade Range. This climate anomaly is commonly referred to as the "Pineapple Express". A Pineapple Express can come at any time and if it is combined with a snowpack like we have now, it can be devastating. Fall, winter and spring floods have all been attributed to this combination of conditions.

The most dangerous elevation zone for floods caused by rain-on-snow events is 2000 - 4000 feet. In this zone, temperatures can rise quickly bringing intense rainstorms. Generally, snowpack is considered transitory, meaning that the snow comes and goes throughout the winter. Transitory snow does not have the chance to metamorphose into a mature pack. The snow is typically softer and laden with water, reducing its ability to absorb and store rainwater.

Historically, floods of devastating magnitude occur in early and mid-winter. However, there is evidence of springtime flooding in years with higher than average snowpack. The graph at right illustrates this fact on the Cedar River near Cedar Falls where the previous record snowpack in this basin was set in 1997.

Many river basins in Washington are regulated by reservoirs. At this time reservoir operators are preparing for a heavy spring runoff by maintaining lower lake levels. For the many unregulated rivers and streams in the state we can expect higher than average spring flows from normal snowmelt.

The extent of flooding in the Northwest will be determined by the way the snowpack melts. A cool dry spring will bring the snow off slowly, providing

sustained flows and minimizing flood potential. If La Nina continues to pound us on into spring, we may see a trend toward tropical-like conditions flowing off the Pacific Ocean.

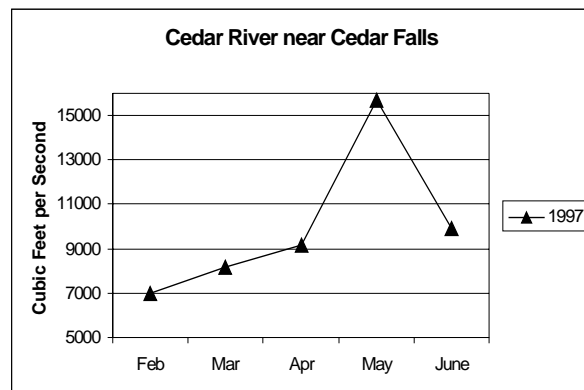
To date, Washington has received record snowpack and precipitation in most river basins. Weather conditions over the next 90 days will determine the fate of our mountain snowpack and govern the potential and intensity of spring flooding.

Note: There are over 600 SNOTEL sites located in 11 western states and Alaska. Data is transmitted from these sites daily to a central computer facility in Portland, Oregon, where it is made available to the public via the Internet within minutes of being collected. Washington specific data is available at: <http://www.wa.nrcs.usda.gov/nrcs/CoopSnoSrvy.htm>.

Basic SNOTEL sites have a pressure sensing snow pillow, storage precipitation gage, and air temperature sensor. However, they can accommodate 64 channels of data and will accept analog, parallel, or serial digital sensors. On-site microprocessors provide functions such as computing daily maximum, minimum, and average temperature information. Generally, sensor data is recorded every 15 minutes and reported out in a daily poll of all sites. Special polls are conducted more frequently in response to specific needs.

SNOTEL uses meteor burst communications technology to collect and communicate data in near-real-time. VHF radio signals are reflected at a steep angle off the ever present band of ionized meteorites existing from about 50 to 75 miles above the earth. Satellites are not involved; NRCS operates and controls the entire system.

Data collected at SNOTEL sites and manual snow course points are used by NRCS and cooperating agencies for calculating spring and summer streamflow forecasts. These forecasts are published monthly, January - June, and are available in printed and electronic format.



**For further information:** Scott Pattee, Natural Resources Conservation Service, (360) 428-7684 ext. 141, [spattee@cio.net](mailto:spattee@cio.net).

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# Uncertain or Diminished Municipal Water Rights: Financing Implications

by Stacey Crawshaw-Lewis, Preston Gates and Ellis LLP

Because of the relationship between municipal water rights, water-related revenues, and bonds payable from and secured by these revenues, any court or legislative action that impacts municipal water rights may have significant financing implications. Whether court or legislative action results in increased uncertainty regarding the status of inchoate rights or an actual diminishment of these rights, systems with financing that depends on these rights may bear additional risks and responsibilities. Namely, under federal securities laws and rules, bond issuers may have a duty to disclose the uncertainty or diminishment. Also, if the municipal bond market perceives the court or legislative action as affecting the risks associated with buying an issuer's bonds, the resulting uncertainty or diminishment may make it more difficult, or at least more expensive, to sell these bonds. Finally, underwriters or other participants in a bond financing may respond to this increased risk by asking the issuer to assume some of the risk.

The Washington Supreme Court, in *Department of Ecology v. Theodoratus*, 135 Wn. 2d 582, 594 (1998), recently ruled that a water permit held by a private developer could be restricted to serving the number of homes built at the time of permit renewal or conversion to certificate status. Although the *Theodoratus* decision expressly declined to address issues concerning municipal water rights, the chance that its reasoning may apply in the municipal context has created some uncertainty regarding the status of municipal water rights that have not yet been put to use. Likewise, legislative responses to this uncertainty, including the Governor's Salmon Recovery Bill, may in fact diminish certificated municipal water rights by returning them to permit status, subject to compliance with various conditions and administrative procedures. (See e.g., Part IV of House Bill 1314/Senate Bill 5289.) On a more positive note, this impact may be cushioned by any resulting increase in the certainty of the status of municipal water rights.

Whether and how this decision and any resulting legislative "fix" impacts issuers of bonds depends on the relationship between municipal water rights, water-related revenues, and the revenue source pledged as security for the repayment of the bonds. In the case of, say, water revenue bonds the relationship may be drastically simplified as follows:

- Water + Customers = System Revenue

- Revenue Requirement = Debt Service (on revenue bonds issued to finance the system or system improvements) + O&M Costs.

To ensure that these revenues are not diverted to uses other than repaying the bonds, the issuer pledges these revenues to the bond owners. This pledge, contained in the bond ordinance or resolution authorizing the bonds as well as in the bond form itself, provides security for the bond owners. The lien of bond owners on these revenues is typically superior to all claims except for maintenance and operation costs. Any legislative or other action that diminishes water rights may reduce the issuer's access to water. Restrictions on service boundaries (e.g., a prohibition on serving annexed areas absent a water right amendment) may reduce the issuer's access to customers. Given that rates are not perfectly elastic, reduced access to water and to customers may decrease water revenues. Moreover, system investments that were premised on access to this water and these customers may be stranded.

From the point of view of bond buyers, limits on the revenue stream pledged to repay the bonds increases the risks associated with buying the bonds. Higher risk may translate into more expensive financing, in the form of increased interest rates or higher bond insurance premiums. Insofar as many investors rely on bond insurers or ratings agencies such as Moody's and S&P to conduct credit analysis, any reaction by these entities to increased risk may have a ripple effect among investors generally.

Issuers may also have a duty to disclose higher risk, under the federal securities laws and rules. In the case of most publicly sold new financings, this disclosure would occur in the preliminary and final official statements for the bonds. Basically, these publications must give investors the material information they need to make an informed investment decision. Given the inherently uncertain nature of municipal water rights, it may be difficult, or at least quite burdensome, for an issuer to give assurances about these rights, particularly given the recent court and legislative activity in this area. Nonetheless, according to the Government Finance Officers Association's Guidelines for Continuing Disclosure, issuers should provide not only general information about the system's assets and revenue sources, but also specific information about any "pending judicial, administrative or regulatory proceedings that may significantly affect the issuer's ability to

perform its obligations to the holders of the securities outstanding.” If there is a significant possibility that even threatened proceedings will be commenced, then these threatened challenges should be disclosed. If the situation is one of material uncertainty, then this fact of uncertainty should be disclosed. The need for and the extent of any disclosure should be guided by the goals of maintaining credibility in the market, fostering liquidity of the securities, improving initial pricing and avoiding the selective disclosure of information. In the case of existing financing, impacts upon revenues may be serious enough also to trigger continuing disclosure requirements.

Before engaging in additional disclosure or paying higher premiums, issuers should decide whether this court and legislative activity in fact impacts their municipal water rights. That is, they should analyze whether they have unused rights subject to any new conditions. Also, it may be prudent for issuers to review the covenants made to bond owners. For instance, a covenant not to diminish system assets may alter issuer strategies for recouping stranded investments.

An issuer who is impacted might consider challenging any new legislation as an unconstitutional impairment of contract (or even an unconstitutional taking). The revenue pledge and the other covenants contained in the bond ordinance or resolution constitute contractual promises between the issuer and bondowners. Since the U.S. and the Washington constitutions forbid the enactment of laws that impair contract obligations, U.S. Const. art. 1, § 10; Wash. Const. art. 1, § 23, legislation that substantially impairs the contractual relationship

and that is not reasonable and necessary to serve a public purpose, may be vulnerable to such a challenge. (See *Tyrpak v. Daniels*, 124 Wn. 2d 146, 151-52, 874 P.2d 1374 (1994).) Naturally, the success of any such argument will depend on the facts of a particular case.

The Governor’s Salmon Recovery Bill suggests a third strategy. Under Section 405 of the initial draft, Ecology may grant an extended development schedule for inchoate rights of up to 50 years if: (1) long term facilities were constructed; (2) planned need is demonstrated; and (3) “debt service requirements extend for such a period”. Under this section, systems with long-term financing may receive favorable development schedules. Thus, it may make sense for issuers to evaluate their existing debt structure to determine whether they are positioned to take advantage of this benefit..

Discussion of the particular arguments involving new legislation is clearly premature as the Legislature continues refining the bill and may not even pass it. Nonetheless, since the *Theodoratus* decision, the status of inchoate municipal water rights may be, at least, uncertain. This uncertainty (and any diminishment that results from a legislative response) raises financing implications. The strategies for minimizing these implications can be preventive as well as reactive. This may be an occasion to evaluate water rights as well as debt structures to determine whether either might be enhanced to allow issuers to better respond in this uncertain climate. ❧

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## Department of Ecology Funding

by Steve Hirschey, Washington Department of Ecology

As part of the Department of Ecology the Water Resources Program (Program) submits a proposed budget to the Office of Financial Management, that is then incorporated in the Governor’s budget proposal to the Washington State Legislature. The political process then takes over and the budget of the agency, and in-turn, the Program is dependent on the work of the Legislature on both policy and budget initiatives. Last November, the Program proposed to distribute its budget to a base level and budget add requests in light of the Governor’s proposed policy initiatives on salmon. The workload of the Program was divided into four broad categories:

1. Watersheds with ongoing 2514 planning efforts;
2. Watersheds with ongoing 2514 planning efforts where ESA fish are at risk

due to current water use (ESA listing with critical water supply);

3. Watersheds with an ESA listing and critical water supply;
4. All other watersheds.

The base level combined with the proposed add packages gives the Water Resources Program a balanced package to allow it to make water rights decisions that do not adversely impact salmon and to take increased enforcement actions where action is needed most for salmon recovery. In addition, there is a focus of supporting watershed planning (See Chapter 90.82 RCW). In looking at the potential geographic distribution of the work and priority of activities, the state was divided by Water Resource Inventory Areas (WRIA) in four categories, and then the base level and proposed adds were distributed across the four categories of watersheds. The four categories are as follows:

<b>DISTRIBUTION OF WATERSHED INVENTORY AREAS</b>			
<b>2514 Watershed Areas</b>	<b>2514 Watershed Areas With ESA with Critical Water</b>	<b>ESA with Critical Water</b>	<b>All Other</b>
San Juan - WRIA 02	Nooksack - WRIA 01	Snohomish WRIA - 07	Stillaguamish WRIA - 05
Lower Skagit/Samish - WRIA 03	Chambers/Clover WRIA - 12	Cedar/Sammamish WRIA - 08	Kennedy/Goldsboruogh WRIA - 14
Upper Skagit WRIA - 04	Quilcene/Snow WRIA - 17	Duwamish/Green WRIA - 09	Kitsap WRIA - 15
Island WRIA - 06	Elwah/Dungeness WRIA - 18	Puyallup/White WRIA - 10	Lyre/Hoko WRIA - 19
Nisqually WRIA - 11	Lower Yakima WRIA - 37	Walla Walla WRIA - 32	Soleduck/Hoh WRIA - 20
Deschutes WRIA - 13	Naches WRIA - 38	Middle Snake WRIA - 35	Queets/Quinault WRIA - 21
Skokomish/Dosewallip - WRIA 16	Upper Yakima WRIA - 39	Wenatchee WRIA - 45	Willapa WRIA - 24
Lower Chehalis WRIA - 22	Methow WRIA - 48	Okanogan WRIA - 49	Wind White Salmon - 29
Upper Chehalis WRIA - 23			Klickitat WRIA - 30
Grays/Elokoman WRIA - 25			Rock/Glade WRIA - 31
Colwiltz WRIA - 26			Lower Snake WRIA - 33
Lewis WRIA -27			Palouse WRIA - 34
Salmon/Washougal WRIA - 28			Esquatzel Coulee WRIA - 36
Moses Coulee WRIA - 44			Alkali/Squilchuck WRIA - 40
Entiat WRIA - 46			Lower Crab WRIA - 41
Foster WRIA - 50			Grand Coulee WRIA - 42
Little Spokane WRIA - 55			Upper Crab/Wilson WRIA - 43
Middle Spokane WRIA - 57			Chelan WRIA - 47
Pend Oreille WRIA - 62			Nespelem WRIA - 51
			Sanpoil WRIA - 52
			Lower Lake Roosevelt WRIA - 53
			Lower Spokane WRIA - 54
			Hangman WRIA - 56
			Middle Lake Roosevelt WRIA - 58
			Colville WRIA - 59
			Kettle WRIA - 60
			Upper Lake Roosevelt WRIA - 61
Total WRIA 19	Total WRIA 8	Total WRIA 8	Total WRIA 27

**The distribution of Base Level and Add Funds is as follows:**

Hydrogeology, Hydrology, & Fish Biology:

**BASE LEVEL:**

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7 average annual FTEs totaling \$854,000 for hydrogeology, hydrology, and fish biology support to 2514 planning areas and areas with ESA listings with critical water supply. 1 FTEs for a total of \$122,000 to support health and safety water rights decisions in the remaining areas of the state.

ADDS:

2 new FTEs year 1; 2 FTEs year 2 (3 average annual FTEs) totaling \$328,000 for technical assistance with water budget development and instream flow determinations in 2514 planning areas.

Information Management:

BASE LEVEL:

6 average annual FTEs totaling \$1,032,000 for data management and system support throughout the state.

ADDS:

1 new average annual FTE and contract work totaling \$1,157,000 to make the Water Rights Administration Tracking (WRATS) system more accessible and compatible (\$500,000); and scan images of all water rights information (\$657,000). This effort will benefit work in all watersheds.

Water Rights Decisions:

BASE LEVEL:

4 average annual FTEs totaling \$488,000 for health and safety water rights decisions in areas that are not included in planning under 2514 and are not an ESA critical area.

ADDS:

7.5 new FTEs year 1; 7.5 new FTEs year 2 (11.25 average annual FTEs) totaling \$1,722,000 for water rights decisions in watershed planning areas and basins with ESA listings with critical water supply.

Watershed Assistance:

BASE LEVEL:

5 average annual FTEs totaling \$610,000 for water rights technical assistance in 2514 planning areas.

Water Plan Review:

BASE LEVEL:

4 average annual FTEs totaling \$488,000 for technical assistance and regulatory review of water plans (e.g. water system plans) throughout the state.

Conservation and Reuse:

ADDS:

5 average annual FTEs totaling \$763,675 for conservation and reuse to be applied in 2514 planning areas and areas with ESA listings with critical water supply.

Gauging:

ADDS:

3 new average annual FTEs for a total of \$929,000 to place additional gauges in areas with ESA listings with critical water supply to monitor compliance and enforce water use during low flow conditions.

Metering:

ADDS:

3.5 new FTEs year 1, reduced to 2 FTEs year 2 (2.75 average annual FTEs) for a total of \$521,000 to require source metering to assess water use, monitor compliance, and enforce water use in areas with ESA listings with critical water supply.

In Stream Flow Protection:

ADDS:

5 new average annual FTEs totaling \$545,000 to enforce in stream flow requirements in non 2514 planning areas with ESA listings with critical water supply.

Basin MOAs:

ADDS:

9 new FTEs year 1, reduced to 4 FTEs year 2 (6.5 average annual FTEs) totaling \$1,003,000 to take near-term actions to enforce water use in 2514 planning areas with ESA listings with critical water supply.

This article reflects the proposal of the Program and now we wait for the Legislature to make its decisions. Additional information related to water resource work and the Governor's proposed salmon bill can be found at <http://www.wa.gov/ofm/budget99/recsum/461rs.htm>. ❧

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# Addressing ESA Issues in an Urban Setting

by Jim Thornton, Golder Associates Inc.

There are many references to the great abundance of salmon in the Northwest, but unfortunately many of these references are from our grandparents' or great-grandparents' time. Many of us think of timber as the great resource of the Northwest, but salmon were harvested along with the timber. In the early part of the century salmon canneries were almost as numerous as the lumber mills. To the native Americans, the salmon have always been a way of life, both for physical and spiritual sustenance.

Today it is much different. The salmon, especially Chinook salmon, are struggling for their continued existence in the Puget Sound region. There are many reasons for the tremendous decline in salmon. Much of this decline may have been inevitable as logging, agriculture, fishing, hydro-power, industrialization, and urbanization spread throughout the region.

At first there were so many salmon the losses were not very noticeable. Salmon populations from hatcheries further obscured the fact that wild salmon populations were experiencing an overall decline. The hatcheries were also contributing to the decline of the native salmon. Now we realize that we may be faced with the potential extinction of a species that has become synonymous with the region.

Collectively we are facing a significant challenge, and none no more difficult than protecting and restoring Chinook salmon in the urban areas of the Puget Sound region. The major urban areas of the region lay astride the major rivers entering Puget Sound. The City of Everett is located on the estuary of the Snohomish River, which has one of the largest drainage basins of all the rivers entering Puget Sound. The Snohomish River is formed by the Snoqualmie and Skykomish and also includes the Pilchuck and Sultan Rivers. All of the adult salmon destined to spawning areas in these rivers and all juveniles heading to the ocean must pass through the Everett urban area.

Many of the cities on the shores of Puget Sound have undergone tremendous change since they were founded. Everett is no different. Over time, the wetlands and shoreline along the Snohomish River and the nearshore areas of Port Gardner Bay were filled in and developed with bustling industries—including pulp mills, sawmills, log rafts, a smelter, canneries, and other marine oriented industries. These industries discharged pollutants into the water and air, significantly impacting the

quality of the water and degrading the surrounding wetlands and marine vegetation. Although the original fill areas remain, many of the former industries are gone and the discharges from remaining industries have improved significantly. Today the challenge is to protect and restore the salmonid habitat in these shoreline areas and to manage the rapidly expanding urban growth.

The City of Everett recognizes the challenges of protecting and restoring salmonid habitat and is in the process of developing a comprehensive plan to meet this challenge. Golder Associates, along with Natural Resource Consultants and FishPro, is assisting the City of Everett to develop a response to the proposed listing of Chinook salmon as a threatened species. The goal is simply stated, but difficult to attain: Increase the escapement of juvenile Chinook salmon to sustainable levels that will ensure their future existence.

This means not impeding adults migrating upstream, protecting and enhancing spawning areas, and providing conditions to allow juveniles to successfully migrate out to Puget Sound.

The City's effort focuses on three areas:

- Identification and review of the City's activities, programs, and policies to ensure they are protective of salmonid habitat;
- Defining and identifying "properly functioning conditions" for Chinook salmon within the City of Everett; and
- Developing an iterative and interactive comprehensive program that will lead to delisting of Chinook salmon.

Throughout this process the City of Everett will coordinate with other government agencies and Indian Tribes within the basin to ensure the plans and programs are compatible and complementary.

Critical to the overall success of the continued existence of salmon is ensuring that efforts are science-based. Understanding the state of the science by collecting existing information on Chinook salmon; defining the "properly functioning conditions" for salmon; and identifying and making inventories of existing and potential habitat are all part of the science-based effort. Also critical to the process is to craft a governance system that protects the "properly functioning conditions" for Chinook salmon. The most difficult challenge is to arrive at a consensus for the appropriate nexus of governance and science. ☞

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## ✍️ MARK YOUR CALENDAR FOR TWO AWRA EVENTS ✍️

### Organizing Continues for the 1999 National Conference

by Peter Sturtevant, CH2M Hill, Inc.

As most of you know by now, our own Washington State Chapter will be hosting the 1999 National Conference in Seattle this December (December 5 through 9). In keeping with the endangered fish designations which have occurred throughout the Northwest, our theme will be *Managing Watersheds to Protect Declining Species*. A considerable amount of effort has gone into inviting and organizing sessions featuring ESA (Endangered Species Act) Programs around the Country. In addition to our own Puget Sound area, we have six confirmed moderators who have organized speakers active in research and management of endangered aquatic species for the following six regions:

San Francisco Bay/Delta, California  
Columbia-Snake Basin, Washington-Oregon  
Middle Missouri River, South Dakota/Nebraska  
Central and Southern Florida  
San Marcos/Comal Springs, South-Central Texas  
Upper Colorado River, Utah-Arizona

Our drive for conference co-sponsors has also been successful at the local and state level. To date we have commitments from the UW Center for Urban Water Resources, the City of Seattle, King County, the Northwest Indian Fisheries Commission and the Washington Department of Ecology, with others pending.

The Call for Abstracts was issued in early March. The deadline for submittal is June 1. Three technical field trips are being organized, with possibly more planned. They include a tour of Seattle's Cedar River Watershed, a tour of innovative, local stormwater control facilities and stream restoration projects, and a visit to the Ballard Locks. Lectures

about interesting technical aspects will be presented on all of the field trips.

In addition to the main conference, there will be a special symposium on Water Resources and the World Wide Web that will run concurrently. Far from the usual series of technical papers, we are planning a format that will be more exciting and engaging for the participants. Each day there will be a plenary session. At one session we are organizing a debate on a controversial ESA-driven water management topic. We are looking to host several major figures to bring forth contrasting viewpoints and stimulate conference-wide discussion. Another plenary session will feature a distinguished panel of experts who will present a national overview of successful (and perhaps faulty) water management strategies for restoring endangered aquatic species. Emphasis will be placed on summarizing what has been learned in carrying out aquatic species restoration programs.

An Advisory Committee of distinguished water resources professionals from around the state has been assisting our Conference Planning Committee. On March 9 we held our second meeting and gained valuable input regarding format of the Conference and ideas for interesting speakers. More on these topics will be presented in upcoming Newsletters.

To date, the Planning Committee has consisted primarily of State Chapter Board members. These include Co-Chairmen Pete Sturtevant and Rod Sakrison, Mike Wert, Chris Pitre, Adam Gravley and Grant Bailey. As the conference date approaches, we will need additional volunteers to help with the many pieces that will form a successful conference. A number of you have already volunteered. If you are interested in helping out, e-mail me at [psturtev@ch2m.com](mailto:psturtev@ch2m.com). ☺

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## Call for Abstracts

This Call for Abstracts for the 1999 AWRA Annual Water Resources Conference has as its core themes:

- Endangered species,
- Watershed management, and
- Aquatic system restoration.

In addition, abstracts for other water resources management topics with relevance to the core themes are welcome. Abstracts are to be submitted by June 1, 1999 using the abstract submittal form available at:

<http://www.awra.org/meetings/Seattle99/call.htm>

A volume of Extended Abstracts of Conference Papers (maximum of four pages each) will be published for distribution at the meeting. Abstracts will be subject to review, acceptance, and editorial standards. Authors must submit the first draft of these extended abstracts by September 1, 1999. Further instructions will be provided upon acceptance of the contributed abstracts. Selected papers related to watershed management and species recovery will be published in a special series in the *Journal of the American Water Resources Association* (JAWRA) in mid-2000.

**Conference Topics:**

Species recovery under the Endangered Species Act involves the organized efforts of local and state governments, private industry and public interest groups as well as professional and political leaders. The 1999 AWRA Annual Water Resources Conference encourages individuals with knowledge in any of these topical areas to submit abstracts of papers for oral or poster presentations. The preference for oral presentations is on actual, on-the-ground experience or scientific research related to species recovery, watershed management, and ecosystem restoration. Other professional and scientific papers that will be acceptable are those related to water resources planning and management techniques associated with core themes.

Suggested presentation topics include the following:

- Coordinated regional response to listing of threatened/endangered species
- Watershed management, collaborative planning models and partnerships, role of watershed councils, politics of fish, assessing public attitudes toward watershed management, and environmental education
- Fisheries management, limiting factors analysis, fish passage, hatcheries, and hydropower
- Water policy, instream flow methodologies, and integrating policy and science at the watershed level
- Habitat protection strategies in riparian, coastal and marine environments, lakes, and watersheds
- Watershed assessment and hydrology, analysis of channel changes related to forest land conversions
- Riparian ecosystem restoration, basic ecosystem functions at local and watershed scale
- Community design strategies to reduce impacts of urbanization, sustainable and low-impact development
- Water quality management, TMDL's, nonpoint pollution strategies for urban development, agriculture and forestry
- Wildland hydrology and graz-

ing management •Landscape analysis and geographic information systems •Also! Water Resources and the World Wide Web

#### **Submission of Abstracts**

Contributors should submit an abstract by JUNE 1, 1999. It should not exceed 250 words and all information must be completed and included on the Abstract Submittal Form. No abstract will be considered unless submitted on this form. If an organized panel or special session is being submitted, EACH AUTHOR must complete the Abstract Submittal Form. Abstracts will be reviewed for originality and technical content. Acceptance notification will be made to the presenting author by JUNE 30, 1999.

Instructions on the preparation of Extended Abstracts and deadlines for revisions and final submission will accompany the acceptance notification. More instructions on the preparation of manuscripts and deadlines for revisions and final submission will accompany the acceptance notification. Final camera-ready copy must be received by OCTOBER 8, 1999.

ALL PRESENTERS OF ORAL AND POSTER PAPERS AND PARTICIPANTS IN PANEL DISCUSSIONS MUST REGISTER FOR THE CONFERENCE AND PAY THE APPROPRIATE REGISTRATION FEES. Participants will be responsible for paying their own travel expenses and registration fees for the Conference. Speakers DO NOT RECEIVE a complimentary registration.

The SuperSaver Registration fee will be approximately \$300 for AWRA members and \$380 for non-members. (One registration includes BOTH the Annual Conference and the Symposium.) Room rates at the Sheraton Seattle Hotel and Towers will be \$133/single \$153/double. ☺

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## **AWRA Washington Section 1999 Annual Conference**

### **WATER RESOURCES LEGISLATION IN THE 1999 SESSION**

**June 23, 1999**

**8:00 am to Noon**

**SAM (Seattle Art Museum)**

With ESA listings looming, it's a watershed year for water issues in Olympia. Salmon recovery, instream flows, municipal water supply and growth, water conservation and reuse, permitting logjam, and water rights transfers are among the subjects on the legislative table this year.

Please join us for a half-day conference to sort out the results of the 1999 Legislature. Find out which bills made it, which didn't, and why. And learn

what's really in those bills that passed. What do the new laws mean for local and state governments, industry, agriculture, salmon, and yourself? Speakers to be announced include legislators, lobbyists, and expert observers. Look for more information in upcoming newsletters and flyers.☺

**Sockeye Salmon Sponsor**

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*Thank You!*

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This newsletter is a publication of the Washington Section of the American Water Resources Association. It is published bi-monthly or quarterly. This is a forum for members to share ideas and opinions; opinions expressed in the AWRA Newsletter are those of the authors and do not necessarily represent the official position of the WA Section of AWRA.

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Submissions are welcome for the May/June 1999 newsletter. The submittal due date is May 8, 1999. The editor reserves the right to make changes for reasons of length, grammar, legality or clarity. Contact Chris Pitre at (425) 883-0777, or send submittals directly via:

Internet Mail: [cpitre@golder.com](mailto:cpitre@golder.com) (most document/graphic formats are acceptable)

Recent newsletters are available on:

<http://earth.golder.com/waawra/>

## What this State Section is All About!

The WA State Chapter of the AWRA fosters educational and professional development.

**Student support** is provided in the form of two annual student fellowships, sponsorship of a student chapter at the University of Washington, underwriting of a special meeting in the late spring hosted by the student chapter, and other subsidies.

**Interorganizational support** is fostered with local, interstate and international organizations.

A **bimonthly newsletter** is published containing in-depth analysis and editorials on current issues.

Several **dinner meetings** are held throughout the year providing good food and good company followed by a presentation by featured guests. **Brownbags** are organized on special issues as they arise.

The annual climax is a **Fall Conference** in November which is the principal funding vehicle for many Section activities, including providing financial support to the Section's Student Fellowship program.

A **dedicated board** of 15 members meets regularly to plan, organize and facilitate events.

The Washington Chapter has been selected to host the **1999 National AWRA Conference** in Seattle.

If you wish to learn more about your Section and/or wish to participate more in Section activities, you will be warmly welcomed. Please contact any of the board members listed in the side

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# February Dinner Meeting Review:

by Naomi Chechowitz, Golder Associates Inc.

The February dinner meeting was entitled "Sustainable Development Practices in Water Resources". The speaker was Jim Wernitz of the US EPA Office of Water. Andrea Volkman of CH2M Hill gave the introduction to both the speaker and the concept of sustainable development. She defined sustainability as balancing the well-being of the natural environment, the economy, and the community. She gave three keys for successful problem-solving in sustainable development practice: think long-term, find effective and long-lasting solutions by systems thinking, and use constraints to define new opportunities.

Jim Wernitz began by presenting the CD-Rom, *Sustainability: Holistic Perspectives for the Next Century*, produced through the Sustainable Communities Program at the EPA. One of CD's objectives is to help make the concepts of sustainability and sustainable development more broadly understood by people in policy-making roles, as well as by others. One way it accomplishes this is by painting an overview of ways in which we and our activities as individuals and a society are interconnected with the natural environment. Together we form a system whose components are linked, affecting each other directly and indirectly, positively and negatively. Using this holism as a framework when making public policy can help us make decisions that lead to sustained health of our communities.

Jim's presentation as well as questions and comments from those in the audience touched on the challenges involved in defining and executing sustainable development practices in the water resources arena, particularly in light of the ESA (Endangered Species Act) and wild salmon runs in the Pacific Northwest. Specifically:

- How do we define acceptable, sustainable wild salmon populations?
- What is the current state of these populations now?

- What do these populations need in order to reach an acceptable sustainable state?
- How are current practices affecting these needs?
- What changes in current practices must be made to allow for these needs to be met?
- Are we willing to make the required changes and to what degree do we rely on voluntary compliance vs. regulatory enforcement to implement these changes?

Jim introduced one effort to define what sustainability means at the local level and to track the local community's progress toward achieving it. Sustainable Seattle is a citizen's organization that has tracked long-term trends in the health of Seattle/King County since 1992. They give the following definition of sustainability: It is the long-term health and vitality of cultural, ecological, economic, and social systems. The group developed a list of 40 indicators used to track the trend toward (↑) or away from (↓) sustainability in the Seattle region (a stable trend is denoted by ⇔). This indicator model has been used by other communities in the U.S. and around the world. Jim presented three of these indicators along with the direction the region is headed with each as determined in the group's report *Indicators of Sustainable Community, 1998*: wild salmon runs ⇔ (stable, but at low levels), water consumption ↑, and vehicle miles and fuel consumption ↓.

Each one of us can probably identify a number of interconnections among these three indicators, and how the trend in one might affect the trend in another. The health of wild salmon runs is linked to the economy, our quality of life, and to the health of the greater natural system of which they and we are a part. To many people, it seems well worth the effort to try to define sustainability in the case of wild salmon, and to work towards providing the environment needed to attain it. ∞

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## Meetings/Conferences

[Editor's note: Announcements of other organizations are included here. To include your announcement, contact [cpitre@golder.com](mailto:cpitre@golder.com). Links to these organizations and further details are provided through our web page at <http://earth.golder.com/waawra/>.

March 24, 1999, 6:30 p.m. ♦ "Current Legislative Activity Related to Water Resources." Washington Hydrologic Society. Mercer View Community Center 8236 SE 24th Street Mercer Island (206-232-3545). ♦ Contact Llyn Doremus for more information.

March 27 ♦ "Water for People Reception" ♦ The local chapter of Water for People will be hosting the Fourth Annual Water For Life fundraising reception in the Dome Room in the Arctic Building (700 Third Avenue) in downtown Seattle. ♦ If you have questions or would like to RSVP, contact AWWA-WFP 11327-17th Avenue NE/Seattle, WA 98125, call 206-297-3024, or e-mail [msmith@water.org](mailto:msmith@water.org).

April 9 ♦ "Sinking Creek Water Law Symposium" ♦ Co-sponsored with the Center for Environmental Law and Policy in conjunction with the UW School of Law CLE Office. The conference will be held at Cavanaugh's on Fifth Avenue in downtown Seattle. ♦ To register contact: UW School of Law CLE Registration 1100 NE Campus Parkway Seattle, WA 98105 Fax: 206-685-3929 E-mail: [uwcle@u.washington.edu](mailto:uwcle@u.washington.edu) OR [www.uwcle.org](http://www.uwcle.org).

May 10-12, 1999 ♦ Annual Spring Specialty Conference. Potential Consequences of Climate Variability and Change to Water Resources of the United States. Atlanta, Georgia. ∞

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# April Dinner Meeting

## Y2K "Millenium Bug" and the Utilities Industry

Don LeMaster (TAVA/R.W. Beck)

The Year 2000 or Y2K "Millennium Bug" and its effect on the utility industry will be the featured topic of the April 28th dinner meeting at the Latitude 47 Restaurant in Seattle. What has been dubbed the Y2K problem has been receiving a growing amount of national and international attention in recent months. For this reason, we thought it would be beneficial to expand our understanding of the potential effects and risks related to Y2K on the utilities industry.

Don LeMaster, CEO of TAVA/R. W. Beck, L.L.C. in Seattle, will provide a third course for the evening with some food for thought on this very timely and provocative subject. Don is a registered mechanical nuclear engineer, with an MBA in finance from University of Southern California, and has authored numerous papers on Y2K and related operational and maintenance issues. He has 25 years of experience with such major engineering firms as Bechtel Power Corporation and R. W. Beck, Inc. TAVA/R.W. Beck, L.L.C. was formed specifically to be focused on the impact of Y2K on the embedded microprocessors that control water, wastewater, gas, and electrical infrastructure.

During his presentation, Don will address a variety of subjects including a brief video and overview of key Y2K issues; strategic steps needed to ensure computer systems are Y2K compliant for the new millennium; a snapshot at what utilities are doing and how seriously they are treating the subject; results of national and international Y2K compliance programs (some good, some not so good); and insights on a range of concerns and attitudes related to this issue. As a wrap-up, we've invited some representatives of local utilities to join Don in a closing Q and A session and provide a quick update on their respective Y2K programs.

With January 1, 2000 only a few months away, have you completed your plans for the transition to the new millennium? Many wait with uncertainty for a New Year's event that could end up being what some anticipate as a far cry from a fun-filled party. Others expect that night to be filled with a lot of fireworks and colorful bright lights. Regardless of your expectations for the upcoming New Year's rollover, the fact remains that some 80 million computers around the world that day will attempt to process time- or date-specific information where the year is designated as "00." Computer systems will interpret the date as 1900 or, if a date calculation occurs, could erroneously output "negative" dates that can not be recognized.

Following our dinner, Don will provide an overview and more specific discussion related to the Y2K concern. As he will mention, any computer or microprocessor system that relies on dates for measuring, recording, calculating, or conveying information will be at risk when the year 2000 arrives. Without Y2K compliance assured, some computer systems might crash, while others will

either halt, or create errors and corrupt data that may go undetected.

At the heart of the Y2K concern are embedded control systems. These systems involve any hardware with date functionality that is microprocessor controlled. They comprise a network of components that rely on one another for information as part of a platform that software systems run on for translating software into machine code. This interdependency can result in major shutdowns of systems or generation of faulty information caused by some unsuspectingly small microprocessor in an obscure location in the system (a weak link). Such shutdowns may be temporary, lasting only days or weeks, or possibly much longer. As a result, public health, safety, communications, security, and commerce could be at risk.

The water and wastewater industry is vulnerable to computer systems failures that could affect materials supply, plant operations, and various information records. Plant operations, for example, rely on a dependable supply and proper metering of chlorine and other treatment chemicals. In addition, various physical and chemical parameters need to be monitored with computer-based instrumentation. Hydraulic controls related to treatment processes and conveyance systems also rely on computer systems that contain microprocessors. While most plants today use supervisory control and data acquisition (Scada) systems to monitor their plant processes, generally all have the ability to switch to manual operations without much difficulty. In the case of a potential long-term power failure, about a third of the respondents to a recent industry survey indicated they could operate indefinitely on alternative power generators, assuming an adequate supply of fuel is available.

Based on industry reports, some specialists in the water and wastewater sector expect to weather the Year 2000 computer problem with few difficulties. Other specialists involved in Y2K compliance do not share this optimism. Most of the nation's population is served by a relatively small number of large drinking water and municipal wastewater treatment systems. A September 1998 survey reported in the February 1999 edition of the water industry publication "WaterWorld" found that systems serving one million or more persons are expected to have little or minimal internal problems from Y2K. The same survey indicated it would be hard to predict, however, whether small and medium size plants will be prepared.

The Journal of the American Water Works Association, a trade publication of the drinking water supply industry, reported in its February 1999 edition that if utilities' computer systems are not prepared for the transition to the new millennium, they could be in for a "rough ride." If computer-based tools and control systems are not Y2K compliant, they may cease functioning properly.

Embedded systems, which are fundamental to the Y2K concern, are found throughout the operations of drinking water and wastewater plants and other utilities. They can be found in equipment related to communications infrastructure, instrumentation, facilities and support, production, and process controls. Information technology computer systems also are at risk during the transition to Y2K. Potential problems may be isolated or could be more wide-ranging involving such things as inaccurate accounts receivables reports (customer accounts could be erroneously listed as being 100 years in arrears); customer accounts that could be inappropriately scheduled to be disconnected due to nonpayment of invoices; heating, ventilating, and air-conditioning system failures; database searches may provide inaccurate information; security system failures that could prevent workers from having access to facilities; maintenance management information systems that could indicate equipment is overdue for maintenance resulting in potential shutdowns; inspection records that may not be retrievable because of invalid date codes; and so on. In a worst-case scenario, drinking water operations that involve treatment and conveyance systems could be adversely affected so that water delivery through the supply system is significantly impaired. Understandably, many utilities recognize such serious concerns and are investing substantial resources to prevent such events from occurring.

Some might think that with all the activity that has been ongoing for several months and with more than half a year left, there must be sufficient time to rectify Y2K problems related to key infrastructure throughout the nation and world. With all our reliance on technology today, it is understandable that some are in denial about the significance of the risk while others are waiting for a silver bullet solution. As Don will report, there is no indication whatsoever that a quick fix will materialize or that even if it did exist could be implemented in time. A major reason for this is due to the magnitude and scope of the inventory process required to find every single controlling microprocessor and related interfacing piece of software. Facilities are often controlled by literally millions of embedded systems that reside deep within the computer logic that regulate equipment and controls throughout plant operations. Finding the embedded systems, and potential weak links is just an initial step in an effective Y2K compliance program.

As part of his presentation, Don will describe the series of steps and related timeframes required to conduct a Y2K compliance program. He will discuss approaches needed for identifying, assessing, and correcting problems related to critical operational systems; the process for validating the effectiveness of remedial measures; and strategies related to implementation of repaired systems. Contingency planning, a vital component of effective Y2K compliance strategies, also will be discussed. Considering the scope of efforts required to implement a Y2K program, it is no wonder that, in many cases, it takes over 28 months to evaluate, correct, and test the "weak links" that could affect vital functions of operations. Hopefully most Y2K programs related to key infrastructure and businesses are well underway based on the remaining time available until year-end. In general, programs

should at least be in the validation or testing phase in order to complete the process on time.

Further complicating the Y2K compliance schedule for information technology systems is the concern that fiscal years and date-related computer code may trigger Y2K events well before the end of the year. For example, fiscal year 2000 for Canada, Japan, and New York State (New York Stock Exchange) will begin on April 1st of this year. Forty-eight states in the nation (including Washington) begin their fiscal year 2000 on July 1st. In addition, date-related computer code (such as 9-9-99 and the 99th day of '99 - April 9th) could signal computer shut downs or corrupt data well before the end of the year. The unavailability of external resources required to fix the problem also will impede the remediation process. The concern is not a localized problem but extends worldwide. It's not likely that utilities located "down the road" or in other parts of the county will be able to send equipment or staff to help out. Everyone is or will be dealing with this. Qualified personnel are very limited and the demand for such people increases each day.

With these considerations in mind, it will be of interest to learn the progress that local utilities and municipalities have made toward Y2K compliance. Based on recent contacts, it is anticipated that representatives of some local utilities will be in attendance and available at the meeting to answer questions and discuss their successes and challenges related to Y2K compliance. Suggestions on appropriate measures to take to prudently plan for potential interruptions to utility services, should they occur, also will be touched on at the meeting.

After receiving additional insights on the challenges facing us over the next few months, we should all have some new perspectives on that bridge to the new millennium. Who knows, you may even have some new plans for New Year's Eve.

Please join us at 5:30 pm for socializing and no-host bar service. Dinner will be served at 6:15, followed by Don's presentation. The meeting will adjourn at approximately 8:30 pm.

Pre-registration for the meeting is requested (\$22.00 for members, \$25.00 for non-members). Walk-ins will be accepted as space allows, for a \$5.00 surcharge. Make checks payable to AWRA Washington Section, and mail them by February 18 to Julianne Ewings, CH2M HILL, PO Box 91500, Bellevue, Washington, 98009-2050. Please indicate your dinner preference of pepper-corn steak with new potatoes or teriyaki vegetables with steamed rice. Both options are served with a spinach salad.

Directions: Latitude 47 Restaurant is located on the west shore of Lake Union at 1232 Westlake Avenue North in Seattle. Take the Mercer Street Exit from I-5. Turn right at the Westlake Avenue traffic light. The restaurant is on the right, about ½ mile after the turn. ☺

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## 1999 Membership Application / Change of Address Form

( ⅂ please circle, as appropriate ⌘ )

Annual membership in the state chapter costs \$25.

(If you attended the 1998 Fall Conference, you are a member for 1999 – Welcome!)

Name \_\_\_\_\_ Position \_\_\_\_\_ Affiliation \_\_\_\_\_

Street Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone(\_\_\_\_\_) \_\_\_\_\_ Fax(\_\_\_\_\_) \_\_\_\_\_ E-mail \_\_\_\_\_ @ \_\_\_\_\_

Check if you would like to be actively involved on a committee during 1999.  
You will be contacted to determine what committee involvement you would like.

1999 Membership Dues (through October 1999): \$25.00. **Checks only.** Please make check payable to **AWRA Washington Section.**

Mail to: AWRA, Washington Section  
c/o Mike Wert, Shapiro & Associates  
101 Yesler Way, Ste. 400  
Seattle, WA 98104

The American Water Resources Association is a scientific and educational non-profit organization established to encourage and foster interdisciplinary communication among persons of diverse backgrounds working on any aspect of water resources disciplines. Individuals interested in water resources are encouraged to participate in the activities of the Washington Section.

*Special thanks to Golder Associates Inc. for word processing and graphics support on this newsletter.*

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