PRESIDENT’S NOTES
Beth Peterson, AWRA-WA Section President

For the last newsletter of 2011 I want to thank the State Section Board members, our volunteers and our supportive members for a great year. Here is a list of a few of our accomplishments this year:

- This will be our fifth newsletter of the year;
- We hosted two student events with the University of Washington AWRA Student Chapter;
- We hosted five dinner/lunch meetings; and
- Held another successful annual conference.

This year’s conference focused on water quality issues across Washington State, focusing on Puget Sound, the Spokane River and the Yakima Basin. Thank you to all the speakers who brought us insight and passion to their talks. There was a new twist to the keynote speaker this year. It was Eric Becker, director of the documentary **Sound and Vision**. He showed us excerpts from the film, which is broken into eight parts and examines the threats to our waters through the eyes of individuals working to protect and restore Puget Sound and beyond. I know it drew me in and left me wanting to see the entire film.

As we look back on the year and some of our accomplishments we look forward to what 2012 will bring to the Washington State Section. Our committees are already moving on ideas for next year. This year the Board approved transitioning to a new website and the template is already in place. It’s going to bring a great updated appearance and ease of navigation and use to the website. Look for the rollout of the new website in 2012. The Board also continues to look for ideas on how to grow our membership and best serve our members.

As we say goodbye and thank you to a few board members who have served for years, we are excited to welcome some new faces to the board and welcome their fresh ideas and energy. You will continue to be in good hands with the 2012 Board. Happy holidays to all! See you in the new year.

UPCOMING UW STUDENT MIXER MEETING – JANUARY 24, 2012:
Elwha Dam Removal, Presented by Sarah Morley, NOAA - NFSC
5:30 PM Social, 6:30 PM Presentation
At UW Waterfront Activities Center, 3900 Montlake Blvd. NE, Seattle, WA 98195

Come support our student chapter on January 24 and get to know up and coming professionals in our field as well as other members of the WA-AWRA. The Student Mixer will include a social hour with drinks and hors d’oeuvres followed by presentation by **Sarah Morley** on the Elwha Dam Removal. I hope you can join us!

Sarah is a field ecologist whose research focuses on biological assessment: using biota to evaluate the condition of a place and better identify the causes of degradation. Within this broad framework, she has conducted research on the effects of urbanization on the health of Puget Sound urban streams and evaluated the effectiveness of restoration actions on streams and rivers in the Pacific Northwest. Sarah holds a B.S. in Environmental Science from UC Berkeley and an M.S. in Aquatic and Fisheries Sciences from the University of Washington. She has been a member of the Watershed Program at the Northwest Fisheries Science Center since 2000.

**REGISTRATION:** The Student Mixer is free for WA-AWRA Members and students. If not a member of WA-AWRA, please consider joining! The WA-AWRA membership renewal form may be found at: [www.wa-awra.org](http://www.wa-awra.org). **Renewals must be made before the event as no transactions can occur at the event.** RSVP at or via web link below: [https://docs.google.com/spreadsheet/viewform?pli=1&formkey=dDg4bTQ0aHYxTG1XWTJLXgy2HB3VGc6MQ#gid=0](https://docs.google.com/spreadsheet/viewform?pli=1&formkey=dDg4bTQ0aHYxTG1XWTJLXgy2HB3VGc6MQ#gid=0)
Call for Water Resource Articles and Announcements

Jenny Saltonstall, AWRA-WA Newsletter Editor

Submissions are welcome for the January/February, 2012 newsletter. The article submittal due date is February 1st. Announcements for water-related events are due February 8th. The editor reserves the right to make changes for reasons of length, grammar, legality or clarity. Contact Jenny Saltonstall at (425) 827-7701 or send submittals direct via email at jsaltonstall@aesgeo.com. We look forward to hearing from you!

This newsletter is a publication of the Washington Section of the American Water Resources Association. 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. Comments on articles are welcome. Reprint and circulation for non-profit purposes are allowed without additional permission if proper credit is given to both source and author.

Sediment Response to Dam Removal: Condit Dam, White Salmon River, WA

By Erika Colaiacomo, University of Montana, Master’s Candidate

Dam removals provide remarkable natural experiments in how rivers process massive sediment influxes. The controlled nature of dam removals, contrary to natural sediment influxes such as landslides and debris flows, allows one to gather pre and post removal data to quantify change and document river response. Particularly important aspects of response are the locations and rates of sediment erosion and deposition and the controls on these variables. At the University of Montana, we are working to quantify the spatial and temporal response of sediment erosion and deposition to dam removals, such as the Milltown dam removal in Western Montana and now the Condit Dam removal on the White Salmon River, Washington.

The removal of Condit Dam from the White Salmon River is notable for a number of reasons. At 125 feet, it is the second tallest dam removed in the United States, trumped only by the Elwha dam removal, and it is the largest “blow and go” removal. On October 26, 2011, Condit dam was breached through a dynamite blast at its base, releasing a mudflow of water and sediment. Within hours, Northwestern Lake behind the former dam was drained and fine sediment draped the 3.3 river miles of the channel to its confluence with the Columbia. Now begins the continued coupled response of reservoir erosion and downstream deposition and erosion of the estimated 2.4 million cubic yards of sediment that has accumulated in the reservoir during dam operation.

To estimate initial reservoir erosion rates, we have installed four time-lapse cameras poised at the former reservoir that have been capturing photos since the breach. To quantify the volume of reservoir erosion, we will compare pre-removal reservoir bathymetry to repeat LiDAR datasets to be flown after the breach. These data will provide an estimate of the sediment volume that has aggregated downstream.

Below the dam site, the river travels through approximately 2.3 miles of a confined gorge before emptying into a slackwater reach, whose level is controlled by the Bonneville pool on the Columbia, for the last mile of the river to its mouth. Of the sediment that has aggraded downstream, we expect transport and increased rates of removal in the confined reach and deposition and a longer residence time in the slackwater reach. In the confined reach, we also expect increased residence time in pools over riffles. To quantify and test these expected responses, we have completed topographic and grain size measurements in August 2011 and will repeat these measurements in January 2012 and the summer of 2012. We will repeat surveys of a longitudinal profile, cross sections and grain size across riffles, and measures of pool lengths, width and depths in the confined reach. In the slackwater reach, we will create bathymetry DEMs from echosounder surveys. We will also use HEC-RAS to model the flows and local forcings associated with varying discharges.
Our hope is that our research on the White Salmon River will provide insight and increase predictive ability for future dam removals. With increasing environmental and economic concerns, dam removal is becoming a more common restoration alternative, but sediment response to dam removal is still largely unknown. This highlights the importance of studying dam removals under a variety of geomorphic settings and removal processes to build collective knowledge on sediment response.

Erika Colaiacomo is a first-year master's student in fluvial geomorphology in the Geosciences department at the University of Montana. She is investigating sediment response to dam removal with her advisor, Dr. Andrew Wilcox. Please feel free to contact her at: erika1.colaiacono@umconnect.umt.edu.

2011-2012 Student Fellowship Awards Announced

By Stan Miller, Awards Committee Chair

At their regularly scheduled meeting on December 4, 2011, the WA-AWRA Board finalized the selection of the 2011 - 2012 Student Fellowship Award winners. This year the Rod Sakrison Memorial Award, presented to a member of an AWRA Student Chapter, goes to Daniel Haskell. Daniel is a student in the Civil and Environmental Department at the University of Washington (UW). Daniel’s thesis topic is “The Characterization of Phthalate Ester Sources to the Foss Superfund Site Using Principle Component Analysis.”

The other fellowship goes to Cristine Schucker from Eastern Washington University (EWU). Cristine’s thesis is titled “Variation in Microbial Populations among Tributaries of Latah Creek.” She is enrolled in the EWU Biology Program.

This year’s winners were chosen from a slate of seven applicants. Four applications were received from UW, two from WSU and one from EWU.

Students enrolled in a graduate program in water resources at a Washington College or University are eligible for the fellowship. The closing date for applications for the 2012 - 2013 academic year will be at the end of October 2012. Two Fellowship Awards of $2,000 each are offered. One, the Rod Sakrison Memorial Fellowship Award will be to a member of an AWRA Student Chapter at a Washington school. In 2007 the Section dedicated this award to the memory of Rod Sakrison in recognition of his effort to increase student involvement in AWRA. Rod was a two-time board president and was instrumental in establishing the UW AWRA Student Chapter. The other award will go to a student enrolled in a graduate program at a college or university in Washington State. In addition to $2,000, each award includes a 1-year membership in both State and National AWRA, a 1-year subscription to the Journal of the American Water Resources Association, and admission to the Washington State Section Annual Conference.
Coal Seam Gas & Managed Aquifer Recharge in Australia

By Chris Pitre, Golder Associates

Coal Seam Gas (CSG) and Coal Bed Methane (CBM) are synonymous terms used in Australia and North America, respectively. CSG development usually targets formations that are too deep for conventional mining. Wells are installed in the formations, and water is pumped out. As the formation depressurizes, significant volumes of methane desorb and are released from the coal. At first, mostly water is produced. Then, progressively more methane and less water are produced. Within a few weeks of the on-set of pumping, so much methane is produced that the well is effectively self-producing by air-lift – or methane-lift – and pumping is no longer needed. The production of water is not intended, but is a by-product of gas production. Considerations of associated water management in Australian operations are described here.

The geographic focus of Australian CSG development is in the eastern part of the Great Artesian Basin (GAB), which underlies ~20% of the continent. The GAB allowed the ‘greening of the outback’ and is considered a national treasure to be protected and preserved. The GAB is similar to the Columbia Basin in the Pacific Northwest, in that it crosses four states, each of which has jurisdiction over the allocation of water law. Over 25 different regulatory jurisdictions bear on associated permitting, requiring tight regulatory coordination by project proponents.

There are four major companies developing CSG in Eastern Australia, along with many smaller developments. Most of the statistics quoted in this article are representative of a single large company, and can be generally multiplied by 4 to represent total market statistics.

To date, most of the water produced has been small quantities resulting from production testing (e.g., <1 million gallons per day [mgd]), and disposal has been by evaporation ponds; this has worked with the small quantities produced during exploration and development phase. However, costs are significant (e.g., ~$50M pond to evaporate 1 mgd) and it is not feasible for full project scale-up – financially or permitting-wise. When full production comes on line in ~2-3 years, peak production of more than 200 MGD will be produced, then will sharply taper off in the following 5 years and for the rest of the projects’ 40-year lifespans. The raw produced water has ~5,000-15,000 mg/L Total Dissolved Solids (TDS; sea water is ~35,000 mg/L), and there is significant variability across the fields.

Policies for the management of the produced water have quickly evolved over the past few years, from both operational and resource management perspectives. Project proponents have been working diligently on identifying a wide range of options as regulators concurrently develop policy, and peak period of water production is rapidly approaching. Some options are described below, all of which require reverse osmosis (RO) treatment to reduce salinity.

The CSG company tenements (blocks) within subbasins (shaded areas) of the Great Artesian Basin.

Groundwater Recharge: Intuitively a good water management concept as it consists of maintaining the groundwater balance and is viewed by state regulators as a possible solution to historical over-allocation and over-extraction practices. Recharge may be required for mitigation if CSG groundwater extraction practices impact current groundwater users and/or environmental values. Initially, project proponents were resistant to this option because of feasibility uncertainty. However, this attitude is changing as artificial recharge becomes better-defined technically, it is recognized that costs are competitive with other options, and guidance from state policy begins to take form.
Irrigation: Some of the most productive agricultural lands in Australia are near or overlap the CSG fields currently being developed. Delivery of water to existing agricultural uses has been considered, as has establishment of new irrigation lands and tree plantations. Irrigation use requires RO treatment of produced water to obtain appropriate water quality (e.g., sodium adsorption ratio [SAR]), plus associated delivery infrastructure and possible land acquisition – all at significant cost. Delivering to irrigation districts requires 3rd party contracting arrangements. Queensland State policy identifies this and other beneficial uses as an option of intermediate preference.

Discharge to surface waters: Delivery of water to streams/rivers requires RO treatment of produced water to meet surface water discharge criteria. Associated beneficial uses include downstream diversion for agricultural uses, and replenishing impoundments that provide public water supply. All of the beneficial uses require 3rd party contracting arrangements. Queensland state policy identifies simple discharge to streams without specific identified beneficial use as the least preferred option.

MANAGED AQUIFER RECHARGE (MAR)

As with all recharge projects, the primary requirement is an appropriate receptive aquifer. All other variables are under the control of people (e.g., delivery, treatment, permitting, costs), but nothing can be done without an appropriate aquifer provided by Mother Nature. Recharge back to the same aquifer is not feasible, else it would repressurise the formation that needs to be depressurized to release the gas. Therefore, overlying and underlying formations are the candidate recharge targets. Each project is presented with a unique opportunity. Some examples for individual companies that are recognized include the following:

Surface infiltration to highly permeable recharge areas of the GAB. Groundwater withdrawal over the last century, mostly for agriculture, has caused water level declines in the GAB resulting in the disappearance of historically flowing artesian conditions from some areas, reduced streamflows, and historically perennial springs going dry. Potential rates of artificial recharge have not yet been established. Initial studies indicate large surface areas would be required, which would require significant investment in land and evaporative losses over the surface area.

Recharge to an alluvial aquifer (300 feet deep) that was over-allocated for agricultural use over the last century and has experienced dropping groundwater levels. Such historical groundwater use has created available storage capacity, and recharge presents an opportunity to restore some of the historical aquifer capacity.

Recharge to regional water aquifers that supply municipal and agricultural uses (~750 feet deep). These portions of the aquifer system have seen some of the biggest water level declines over the past century.

Recharge to a prolific GAB aquifers immediately underlying RO treatment plants. This aquifer is 1 mile deep and presents the capacity to receive most, if not all, of the produced water for one project (e.g., peak delivery of 25 MGD continuously for 3-5 years, and lesser amounts over 40 years). Though the cost of individual wells is high, the unit cost per recharge capacity is expected to be competitive. This offers elegance in the solution being self-contained in financial (i.e., no third party contracts) and geographic (i.e., no transmission costs) terms.

CHALLENGES

Regulatory Uncertainty: Federal and state regulations are in formative stages. Although projects are developing quickly, there are few Australian precedents that regulators and project proponents can use. Even though the water to be recharged is of very high quality (e.g., treated with RO), and regulatory policy states recharge is the preferred option, permitting is overly strict and slow. From the near absence of policy when these projects were started several years ago, newly-forming policy is presenting mid-game rule changes that make it difficult for proponents to chart the development course of projects that usually need several years to evaluate and implement, and which need to be done within the next two years when peak water production will be underway.

Public Perception: Parts of society are suspicious of the CSG industry for various reasons. CSG companies have been variably effective with public outreach programs. Development consists of installing approximately 20,000 gas production wells in the next few years on a ½-mile grid, all connected by pipelines which often cross agricultural lands. However, water is a prime commodity in the arid interior of Australia, and some stakeholders are working hard to put the produced water to the best social use. Average annual rainfall is ~24 inches, though evapotranspiration exceeds precipitation, sometimes by a factor of five.

Technical: The sedimentary formations considered for recharge are quite variable, mineralogically (e.g., swelling clays, carbonate, pyrite), geochemically (redox), and structurally (faulted and folded, presenting boundary conditions). Extrapolating short term test results to a continuous 24/7 recharge operation that will last years requires the use of regional geological models and geophysical data to map potential issues. Tweaking the chemistry of the recharge water produced by the RO plants is completely doable, but requires the geochemical insights to get it right the first time – using the wrong chemistry once can irreversibly render an expensive good well useless.

Brine Production: The RO treatment processes ~80% clean water with less than 500 milligrams per litre (mg/L) total dissolved solids (TDS). And ~20% brine with 3,000-75,000 mg/L TDS, depending on the salinity of the feed water. Although not the focus of this article, similar management issues are related to the brine. Three principal options are: 1) crystallization of salts as a commercial product; 2) landfill disposal; and, 3) deep injection to non-potable aquifers.
INTERESTING POINTS

In contrast to the Pacific Northwest experience of putting water into the ground for future withdrawal, the CSG experience is the reverse – taking water out of the ground and putting it back in.

Whereas methane is the commercial target, huge volumes of water are produced and must be managed, to the degree that CSG companies effectively become water companies with dedicated water departments.

The CSG companies are entitled under federal regulations to produce water incidental to gas production activities. Management of water after production is a state jurisdiction. Although RO treatment is expensive, sales of water directly to users or getting state credits under water-sharing plans offer partial offsets of those costs, which explicitly acknowledge the value of the water as a resource, as opposed to a waste.

The perspectives of petroleum production and water management practitioners often present interesting contrasts. Standard practices in one field do not always lend themselves to immediate acceptance in the other field. Presenting concepts from first principles, and reviewing why standard practices are what they are, sometimes results in surprising re-evaluation of long-held tenets.

Given the issues at stake (e.g., getting a MAR project on line within two years), high-quality research-grade work is afforded in order to unequivocally inform project proponents, regulators and other stakeholders on the feasibility of MAR.

Designing a $5M well to evaluate MAR feasibility to depths of 1 mile introduces a new range of engineering, logistical and regulatory considerations. A misstep in the installation of such a well, or missing the collection of critical data, can set a project schedule back, with significant consequences.

Water is produced continuously without seasonal variation, whereas demand for the water for some purposes (e.g., irrigation) is variable. Supply to groundwater recharge can be varied as needed. In this way, the receiving aquifers of a MAR program act as an enormous operational storage reservoirs to facilitate conjunctive uses.

The opportunity is much appreciated to work on and contribute to projects of such significance for whole water management, project proponents, with the specialty technical resource support, in an evolving regulatory framework that can establish precedents.

Chris has worked with Golder Associates since 1998 with a practical emphasis on water management policy, Aquifer Storage and Recovery, reclaimed water, and water rights in the Pacific Northwest. He is currently in the middle of a two-year assignment to Australia working on recharge projects. He can be contacted at: cpitre@golder.com.

Dinner Meeting Review: Status of the National Flood Insurance Program

Talk Given By: John Graves, FEMA Region X, Summarized by Beth Peterson

On September 22, John Graves from FEMA Region X spoke about the “FEMA Bi-Op” and the status of the National Flood Insurance Program (NFIP) implementation – the history, the regulations and the implementation.

First he started with a brief history of the biological opinion. In 2003 the National Wildlife Federation sued FEMA for failure to comply with the Endangered Species Act (ESA) for Puget Sound runs of salmon. In 2004 the Courts ruled that FEMA must consult with National Marine Fisheries Service (NMFS). In 2008 NMFS issued a biological opinion that determined implementing the NFIP does indeed cause jeopardy to salmon and orca whales in the Puget Sound. In the biological opinion NMFS recommended a “reasonable and prudent alternative” on implementation of the NFIP to comply with the Endangered Species Act.

The NFIP is implemented the same in all states. FEMA’s view of the biological opinion is they are not changing the national regulations for Puget Sound, the protection of species is covered under the current regulations and required permits. The current rule states that a community must comply with all state and federal laws. However, they are stepping up enforcement of the regulations and trying to change the culture of floodplain management. FEMA is changing the way they do business. They are pursuing National ESA implementation into the NFIP.

There are 122 communities affected by the biological opinion. FEMA has provided three options to a community to comply with the biological opinion. They have come to be known as Doors 1, 2 and 3.

Door 1 is the programmatic approach, by adopting a model ordinance developed by FEMA. Door 2 is also a programmatic approach, the community by community approach, developing a checklist. Door 2 utilizes the existing regulations and ordinances in place and adopted at the local level. These regulations can include the Shoreline Management Program, Growth Management Act, and Critical Area Ordinances. Door 3 is the project by project approach, permit by permit showing of compliance.
The deadline for each community to comply was September 22 by submitting their plan and proof of adoption of ordinances or checklist, as required, to FEMA. As of the morning of September 22 four communities had adopted the model ordinance, thirty-six had submitted for Door 2 although not all plans had been approved yet, and the rest of the communities had either submitted or defaulted to Door 3. For any community that had not submitted into Door 1 or 2 they were automatically defaulted to Door 3. Many communities intend to only be there temporarily, while they work within their communities to modify and adopt ordinances to comply with the biological opinion.

FEMA found some common deficiencies in a community’s program of ESA compliance and the NFIP including:

- Riparian buffers not being wide enough;
- Deferring to “no net loss” versus “not adversely affected;”
- Vegetation retention;
- Channel Migration Zone - has to be addressed but not mapped outside of the special flood hazard.

The next phase for FEMA will be to take this from implementation to compliance. FEMA will be providing community assistance visits. Also if there is failure to implement the new program there are a few steps that FEMA will take. The first will be providing technical assistance to a community. The second step would be to remove a community’s Community Rating System (CRS) classification. The third step would be to put a community on probation and if that still doesn’t work FEMA will suspend a community out of the NFIP.

**Review of the 2011 AWRA Washington State Conference**

By Peter Sturtevant, Conference Committee Member and Scott Kindred, Conference Chair

This year’s annual conference was held on October 4, once again on the campus of Seattle University. This year’s theme was A Perspective on Water Quality Issues across Washington State. Conference Committee (consisting of Scott Kindred (Chairman), Pete Sturtevant, Tyler Jantzen, Tom Ring, Jenny Saltonstall, Felix Kristanovich, and Colleen Rust) put in many long hours organizing the event and recruiting speakers. Three sessions reviewed water quality issues in three different parts of the state: Puget Sound, the Yakima River Basin, and the Spokane River Basin.

In the first session Gary O’Keefe, Executive Director of the Puget Sound Partnership, discussed the Action Agenda that has many important goals established for improving Puget Sound water quality by 2020. Dr Joel Baker, Director of the Center for Urban Waters in Tacoma, presented an interesting approach for forensic chemical methods that are useful in identifying sources of organic pollutants. The recently appointed Executive Director of People for Puget Sound, Thomas Bancroft, presented lessons learned from the large Chesapeake Bay restoration effort and how they might apply to Puget Sound. The primary lesson learned is that the agencies responsible for the cleanup were not held accountable and the money was not spent on solving the most pressing issues.

The second session reviewed a number of water quality initiatives in the Yakima Basin. Anna Lael, Kittitas County Conservation District Director, outlined that agency’s successful efforts to improve irrigation efficiencies and reduce water use in the basin. Elaine Brouillard described a joint effort by the Roza and Sunnyside Irrigation Districts to reduce sediment in the discharge canals. Runoff from individual farms is monitored and offending farmers can have their irrigation water reduced for repeated turbidity violations. As evidence of the success of this program, over the last decade violations of suspended solids in the discharges from the return canals have been reduced by 90%. And the river fish consumption advisory (due to DDT levels in the fish) was lifted in 2009. Finally, Kurt Black and Sandy Hals-

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**PLANNING FOR 2012 IS UNDERWAY – LET US KNOW WHAT YOU THINK!**

We are starting to plan for the 2012 Washington State conference, to be held in the Fall, and would like to know which topics are most interesting to YOU! Please take a few minutes to fill out the following online survey:


Some organizations are already budgeting their corporate sponsorship and conference attendance plans for 2012. If this applies to you, please consider the 2012 AWRA State conference in your application.
ment practices to reduce phosphorus loads to the various major tributaries in the basin. He pointed out the need for cross-state cooperation, as the upper portion of the Spokane River lies in Idaho. Finally Rick Eichstaedt (Center for Justice) detailed the role that citizen involvement has played in shaping the water quality improvement effort in the basin. He also stated that a number of other parameters beside phosphorus must be tackled in the effort to restore water quality in the Spokane River.

The fourth session was devoted to individual presentations on a variety of water topics. Two sub-sessions and a total of six presentations were held. For the second year in a row, the evening Reception was jointly held with three chapters of Engineers without Borders. The event was hosted in the lovely Campion Ballroom with complimentary wine and delicious hors doeuvres served. The Chapter wishes to thank Dr. Phil Thompson, Seattle University for the Joint Reception and for making it possible for our Chapter to use the lovely Seattle University facilities for our conference.

AWARD FOR OUTSTANDING CONTRIBUTION TO WATER RESOURCES GOES TO ED O’BRIEN

As happens at each of the conferences, a member of the state’s water resource community was presenting with the annual award for Outstanding Contribution to Washington’s Water Resources. This year’s winner was Ed O’Brien with the Department of Ecology. For more than two decades Ed has been perhaps the most visible and constant champion for improved management of stormwater runoff. In the early 1990s he spear-headed the development of one of the first regional stormwater management manuals in the Country: the (now) venerable Stormwater Management Manual for the Puget Sound Basin. That evolved into the Stormwater Management Manual for Western Washington and was soon followed by the Stormwater Management Manual for Eastern Washington. Though certainly not the only person involved in advancing stormwater practice in the State of Washington, it is no understatement to say that Ed’s efforts were instrumental in Washington’s long-held position as the forerunner of stormwater management in the United States.

Thanks to everybody who helped make the 2011 conference, “A Perspective on Water Quality Issues Across Washington State”, such a success, especially our sponsors. You can find presentations and the program for this and other past conferences on our website: http://earth.golder.com/waawra/ASP/2011Conference.asp

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By Felix Kristanovich

I had the privilege of attending the AWRA National three day Conference. The highlights of the Conference included engaging presentations by outstanding journalists Cynthia Barnett and Charles Fishman who discussed Ethics of Water and world case studies of various water use. While Cynthia challenged historical abuse of Florida water resources, Charles noted specific examples of wide world water use including Smart Water use in Hong Kong, and overall trend in more efficient water use in the USA; resulting in decreased water use in 2011 compared to 1980, despite significant population growth.

Significant parts of the Conference were allocated to development of the national water vision and strategy, paramount for a clear framework for sustainable water management of water resources, and improvement of integration of water resources. Several panels discussed separate parts of this vision: (a) implementation of the Integrated Water Resources Management (IWRM) by water resources managers from national, tribal, interstate, state, and local levels; (b) features assessing the Upper Rio Grande Water Operations Model; (c) status of the US-Mexico Trans-boundary Aquifer Assessment Program addressing challenges in exploration of the three aquifers in this region; (d) analysis of the link between water efficiency and instream flows, exploring links between water efficiency, instream flow protection, and watershed health, based on practical experience in US; (e) Innovative practices and IWRM in Indian Country; and (f) challenges associated with forging a 21st century water research agenda in Indian Country.

The USGS scientists excelled in presenting development and application of SPARROW (Spatially Referenced Regression on Watershed Analysis) model – the main contributors in this model gave a synthesis of spatially explicit model results for major regions of the Conterminous US, as well as selected regional application of this model in Tennessee, Missouri River Basin, and Chesapeake Bay. The climate change impact on surface and groundwater resources was addressed separately in several sessions. The City of Albuquerque was an outstanding location for this conference, with temperature varying between freezing at night and comfortable 50 during the day. The Hyatt regency venue was almost perfect, with my only objection to the breakfast menu that did not change from day to day. The Conference organizers got ingenious when they led social night dinner at the City’s interactive science museum (EXPLORA). After the dinner, we played at the Water of Life and some other interactive water-related exhibits. The socializing was brightened with a beer provided by the City’s famous micro-brewery.

By Brian Henn, University of Washington Ph.D. Student

The AWRA University of Washington Student Chapter held its fall kickoff meeting on November 2. The meeting attracted graduate and undergraduate students from a range of schools and departments, including the School of Forest Resources, Department of Civil and Environmental Engineering and the Evans School of Public Affairs. The chapter is looking to plan a number of events in the academic year, including the annual student-professional mixer, screenings of water resources-related documentaries, infrastructure site visits, volunteer field days and a wintertime snowshoeing adventure.

The 2011-2012 AWRA student chapter officers elected at the meeting include:

• President: Megan McPhaden. Megan is pursuing a Master of Science from the School of Forest Resources, and a Master of Public Administration from the Evans School of Public Affairs. She is interested in water quality and watershed management.

• Secretary: Chris Ewing. Chris is seeking a master’s degree in Hydrology and Water Resources Engineering and his research involves green stormwater management.

• Treasurer: Morgan Knighton. Morgan is pursuing a BSCE in the Department of Civil and Environmental Engineering, and is interested in water and wastewater treatment.

• Publicity: Mori Wallner, Evans School of Public Affairs.

• Liaison to Professional Chapter: Brian Henn. Brian is a Ph.D. student in the Department of Civil and Environmental Engineering, researching the role of atmospheric and climate dynamics in Western U.S. water supply.

• Webmaster: Mark Raleigh. Mark is pursuing a doctorate in the Department of Civil and Environmental Engineering. His research and professional interests include snow hydrology, remote sensing applications and water supply forecasting.

More information of the UW Chapter of the American Water Resources Association is located on our website: http://students.washington.edu/awra/
**Become a Corporate Dinner Meeting Student Sponsor**

AWRA-WA is offering a unique opportunity to support students, by offering firms the chance to sponsor students to attend our monthly evening dinner meetings free of cost. The AWRA-WA Dinner Meeting Student Sponsorship shows support for the professional development of students intending to pursue water resources as a profession. In addition, your firm will be recognized at the event as a AWRA-WA Dinner Meeting Student Sponsor, earning the appreciation of our members.

Our intent is to provide opportunities for interested students to gain exposure to timely water resource issues and professional networking opportunities. Corporate sponsorship includes the following: sponsorship of a single student is $30 and firms can sponsor an unlimited number of interested students. Our goal is to sponsor every interested student. Students will be selected on a first come first serve basis. Corporate sponsors will have public acknowledgment of sponsorship during the meeting.

To become an AWRA Dinner Meeting Student Sponsor or for more information, contact: **Colleen Rust** at colleen.rust@hartcrowser.com or at 206-826-4652.

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**Call for Student Mentors and Information for Students**

AWRA, Washington section is always looking for professionals and others to mentor graduate students in the AWRA student chapter.

Students are busy too, so the commitment may consist of nothing more than a coffee or lunch once a month or once a quarter. Providing a little perspective on studies and career choices can go a long way for students. If you are interested in mentoring, email **Megan Kogut** at mbkogut@gmail.com with questions or a short biography for posting on the AWRA website. For more information about mentoring, see: [http://earth.golder.com/waawra/ASP/Students.asp#mentoring](http://earth.golder.com/waawra/ASP/Students.asp#mentoring).

**STUDENT DINNER SPONSORSHIP**

AWRA-WA is pleased to present students the opportunity to attend our dinner meetings free of charge. Our meetings feature an informative presentation by a guest expert on a timely water resource issue. The events are well-attended and offer lively conversation and professional networking opportunities.

Student sponsorship will be offered on a first come first serve basis and the number sponsored seats will depend on the number of corporate sponsorships obtained for each dinner meeting. If you are interested and would like more information, please contact: **Colleen Rust** at colleen.rust@hartcrowser.com or via phone at 206-826-4652.

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**What this State Section is All About!**

The Washington 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, national, 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 the **Annual Section Fall Conference**; the next one will be held this Fall, 2012. The Conference is the principal funding vehicle for many Section activities, including providing financial support to the Section’s Student Fellowship program. A **dedicated board** meets regularly to plan, organize and facilitate events. 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 on Page 11.
Upcoming Events

AWRA Events
The Washington Section of AWRA holds regular dinner meetings, including a social hour, dinner, and a speaker. Other meetings and conferences are listed on our website, www.wa-awra.org. National event information is posted at www.awra.org.

January 24, 2012 UW AWRA Student Mixer: Elwha Dam Removal, presented by Sarah Morley, NOAA – NFSC. 5:30 PM Social, 6:30 PM Presentation, Location: UW Waterfront Activities Center, 3900 Montlake Blvd. NE, Seattle, WA.


Other Water Resources Events


February 7-9, 2012 Evergreen Rural Water of Washington 18th Annual Conference & Tradeshow at the Yakima Convention Center http://www.erwow.org/


Links To Other Local Water Resources Related Associations

Washington Hydrologic Society http://wahydro.org
Washington Water Research Center: www.swwrc.wsu.edu/conferences.asp
Northwest Fisheries Ass’n: http://www.northwestfisheries.org/index.asp
Center for Environmental Law and Policy: http://www.celp.org/;
2012 Membership / Change of Address Form
( please circle, as appropriate )

Annual membership in the state chapter costs $35.

Name___________________________ Position___________________ Affiliation________________________

Street Address________________________________ City _________________ State ________ Zip__________

Phone (______)______________ Fax (_____)_______________ E-mail________________@_______________

☐ Please indicate if you prefer to receive your newsletter electronically.

☐ Check if you would like to be actively involved on a committee:
   You will be contacted by a board member.

2012 Membership Dues: $35.00.

Preferred Method: Pay via Paypal on our website.

For Checks: please make payable to AWRA Washington Section.

Mail to: American Water Resources Assoc. WA. Section
   P.O. Box 2102
   Seattle, WA 98111-2102

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 Associated Earth Sciences, Inc. for word processing support on this newsletter.

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American Water Resources Association, Washington Section
P.O. Box 2102
Seattle, WA 98111-2102

(Change service requested.)