



## PRESIDENT'S NOTES

**Scott Kindred, AWRA-WA Section President**

First I would like to begin by thanking our outgoing President, Beth Peterson, for her outstanding leadership and contributions to the Washington section. She continues her leadership role by taking on responsibility for heading up the new Membership/Communications Committee (see below).

I would also like to acknowledge the contributions of several outgoing board members including: Pete Sturtevant, Cleve Steward, Steve Swope, and Matt Marineau. Pete and Cleve were long-time board members and have both served as board Presidents in the past. Steve has been in charge of all our emailing over the last several years and Matt served as Newsletter Editor during the last year.

The board has been backfilled with a number of enthusiastic new board members, including Tyson Carlson with Aspect Consulting, Tyler Jantzen with CH2MHill, Matt Stumbaugh with the University of Washington, and Kristina Westbrook with King County. We welcome their energy and ideas to the board.

One of the changes this year is the new Membership/Communications Committee. This committee was formed by joining two separate committees, Communications and Membership, in recognition that serving and growing our membership is directly linked to our ability to communicate with our members. Continuing work that began last fall, the committee has been busy implementing our new membership/website platform. We believe this new platform will improve communications with our members, increase the visibility of our events, offer access to content generated by our newsletter and events, and provide an opportunity for our members to interact with each other. Additional details are provided elsewhere in this issue.

We have an exciting program for this year. The calendar of dinner meetings is filling out, newsletter articles are rolling in, and conference planning is hitting the ground running. Our strategic planning effort has clarified our long-term objectives and created a plan that is focused on achieving these objectives. This plan includes the following:

- 1) Creation of a new committee, Strategic Partnerships, which is focused on providing additional value to our corporate sponsors, defining marketing partnerships with other associations working in water resources, and building relationships with universities.
- 2) For those of you located in the south sound and east of the mountains, we are currently working on several events that should be closer to home.
- 3) We are continuing our support for students working in water resources by offering free registration for our dinner meetings and sponsoring joint events with our student chapters. We had a huge turnout (perhaps record-setting!) at our recent joint event with the University of Washington.

Lastly, I want all members to know that there are opportunities for you to participate in helping the Washington section better serve the water resources community. Let us know if you have an idea for a dinner/lunch speaker. Share your work with others and provide visibility for your organization by writing an article for the newsletter. Finally, we encourage all of you to participate by joining one of our many committees. It's a great opportunity to network and contribute.

### INSIDE:

Call for Water Resources Articles and Announcements – Page 2

Variation in Microbial Composition among Tributaries of Latah Creek – Pages 2-3

AWRA New Website – Page 3

The Characterization of Phthalate Ester Sources to the Foss Superfund Site Using Principle Component Analysis – Pages 4-5

Celebrate Water Resources in March – Page 6

UW AWRA Student Mixer Meeting Review: Elwha Dam Removal: Past, Present, and Future – Page 7

Call for Nominations for Outstanding Contribution to Washington's Water Resources – Page 8

Announcements – Pages 9-10

## Save the Date! AWRA-WA Annual Conference, Sept. 11-13

The AWRA-WA annual conference will be held September 11-13, 2012 in Ellensburg, WA. Topics will focus on the Columbia River Basin, including the 2014 Columbia River Treaty Review. Don't miss this chance for networking and conversations about some of the most pressing water resources topics in Washington today.

<http://waawra.memberlodge.org/>

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# Call for Water Resources Articles and Announcements

Jenny Saltonstall, AWRA-WA Newsletter Editor

Submissions are welcome for the Spring, 2012 newsletter. The article submittal due date is April 30, 2012. Announcements for water-related events are due May 8, 2012. 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](mailto: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.*

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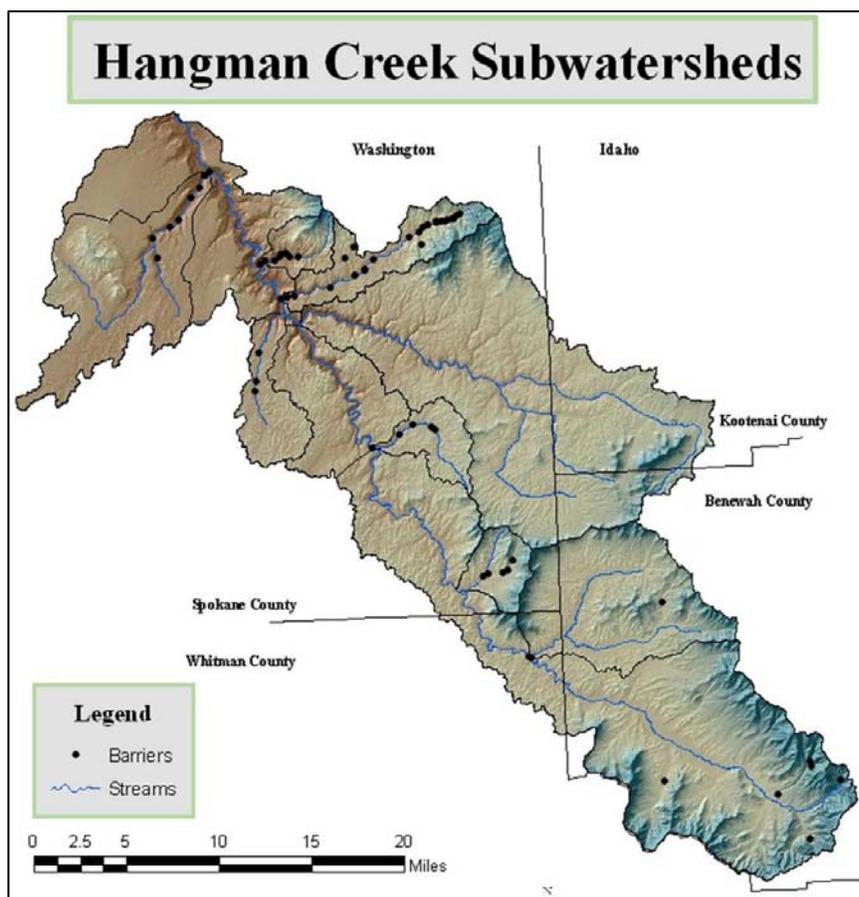
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## Variation in Microbial Composition among Tributaries of Latah Creek

By Cristine Schucker, Eastern Washington University, Master's Candidate

Microbes are ubiquitous and fundamental to the function of all ecosystems. In addition to their key roles in global decomposition and recycling of nutrients, they form important symbiotic relationships with many organisms and ultimately represent the majority of the earth's biomass. Currently many research funding agencies are providing substantial grants to scientists studying nutrient cycles on a regional and global scale in an effort to identify anthropogenic impacts on these processes. Most research in this area has been in marine environments. However, understanding these processes in smaller, regional aquatic systems such as streams, aquifers and rivers is relevant to the understanding of the global processes (Paerl and Pinckney, 1996). Previous studies in aquatic environments have shown that microbes are affected by environmental factors that alter their community structures, distribution and abundance. Many of these studies have focused on factors that affect the presence of microbes required for nitrogen cycling. Marine research on nitrifying bacteria and Archaea has shown that the composition of nitrifying microbial communities depends on salinity, oxygen availability, seasonality, and hydrologic factors. Less research has been completed on microbes in freshwater systems, however existing studies have shown that metal contamination, pH, and sewage outfall affect microbial community composition. Strong correlations have been observed between ammonium levels and the distributions and abundance of nitrogen cycling microbes.

The global nitrogen cycle is a complex system that relies on microbes from the Bacteria and Archaea domains to transform nitrogen (N) into various forms and



make these available to ecosystems. While nitrogen fixing organisms generally dwell in the water column, nitrifiers and denitrifiers reside in the sediment, although there is still much to learn about their exact positions in the strata for different aquatic environments. This complex system that naturally helps to maintain rates of nitrogen transformation has been impacted by anthropogenic activities, and the study of microbes in this process has become more important. As human population increases, so does the demand for agricultural production. In 1905 the Haber-Bosch process was invented to directly transform  $N_2$  into ammonia ( $NH_3$ ) which allowed for production of agricultural fertilizer. This chemical production of ammonia is critical for increasing global crop yields and now surpasses the rate

of natural N-fixation. Anthropogenic N-fixation also occurs through the cultivation of nitrogen fixing crops, such as alfalfa, peas and soybeans; the burning of fossil fuels, which releases geologically stored fixed N; and the degradation of riparian zones and wetlands, which act to slow the mobility and increase the retention of fixed N. These anthropogenic inputs create an abundance of nitrogen on a global scale. High nitrogen concentrations can be detrimental to ecosystems in many ways. The majority of nitrogen in fertilizer, usually in the form of ammonia, is not retained where it is applied and can enter watersheds via surface runoff, groundwater seepage, or wind deposition. If not mitigated locally, it is transported downstream, remaining mobile until transformed, retained or dumped into terminal reservoirs such as lakes or oceans, where it can produce hypoxic zones, of which there are currently in excess of 400 zones globally.

Streams and rivers are important pathways for nitrogen in all forms and understanding how microbial functions vary in response to nitrogen additions within many watersheds is unknown. The Latah Creek watershed in Washington State drains approximately 430,000 acres of mixed use land: urban/residential (12,565 acres), forested (119,490 acres), and agricultural (212,880 acres). Agriculture has been shown to contribute pollutants and excess nitrogen into stream systems and most areas of this watershed reside in agricultural acreage. In addition, many reaches of Latah Creek itself are below state water quality. Because the tributary streams of Latah Creek reside in urban and agricultural drainages, samples from these stream sediments can capture microbial communities at different spatial gradients of land use along the watershed.

While many studies on aquatic microbes have analyzed sediment samples by culturing them in the lab, this excludes those microbes that are not easily cultured. Current molecular techniques, by contrast, provide a rapid and accurate analysis of microbial communities by analyzing the DNA / RNA composition regardless of their ability to be cultured in the lab. This is possible because a system-wide extraction of genetic information occurs, including all of the microbes present in the sediment samples. Two techniques commonly used in microbial

research are terminal restriction fragment length polymorphism (T-RFLP) and quantitative polymerase chain reaction (qPCR) (Zak et al., 2006). T-RFLP on the small ribosomal subunit 16S rRNA is specifically useful for comparing differences among community compositions as it isolates hypervariable regions in this sequence and identifies differences in community constituents. qPCR on specific functional genes, such as the ammonia monooxygenase gene *amoA* (the nitrification gene), is used to measure gene abundance in a sample, which can help quantify functionally similar microbes.

For my research I have collected sediment samples from ten locations within the Latah Creek watershed, including urban impacted tributaries and agriculturally impacted tributaries. These sites begin at the forested headwaters near Sanders, Idaho and terminate at Marshall Creek near the Spokane River junction. Water samples were also collected and will be analyzed for nitrogen chemistry and pH. After extracting the DNA, I will use the T-RFLP and qPCR techniques to assess overall microbial community compositions and to measure the *amoA* gene abundance. I predict that the diversity of microbes will be higher in urban impacted tributaries and, conversely, lower in agriculturally impacted tributaries. I also predict that the nitrification gene abundance will be higher in the agriculturally impacted tributaries and that communities in streams with less agriculture in their watersheds may be more similar to each other than those from streams in high agriculture watersheds.

**Cristine Schucker** received one of the two AWRA Washington State Chapter fellowships in December 2011. She is a Graduate Fellow in the Biology M.S. program at Eastern Washington University, and plans to complete her research in April 2013. She can be reached at: [cschucker@eagles.ewu.edu](mailto:cschucker@eagles.ewu.edu).

## REFERENCES

- Paerl H, Pinckney J (1996). A mini-review of microbial consortia: Their roles in aquatic production and biogeochemical cycling. *Microb Ecol* 31:225-247
- Zak DR, Blackwood CB, Waldrop MP (2006). A molecular dawn for biogeochemistry RID B 3839-2010. *Trends in Ecology & Evolution* 21:288-295 DOI 10.1016/j.tree.2006.04.00

## New Website Now Live!

The Washington Section of AWRA is proud to announce that our new website is now live. You can find the website online at: <http://waawra.memberlodge.org/>

The new site contains a lot more information about the Chapter, our events, our committees and Board meetings, and links to partner organizations. The website will also manage the Section's membership database. So you are able to enter and manage your information, and able to sign up and pay for events right from the site.

There are three types of memberships: 1) "Member" - a paid member who receive all the advantages of being an AWRA member, 2) "Guest" - free member who will receive our email announcements, and 3) "Student" - free for students and they will receive our email announcements. More details on membership can be found on the website. *If you want to continue to receive emails from AWRA - Washington Section go to the new website and register.*

We are very excited about the new website but are always looking for feedback. If you have any comments or suggestions please feel free to contact **Bailey Theriault** at [Bailey\\_Theriault@golder.com](mailto:Bailey_Theriault@golder.com)

# The Characterization of Phthalate Ester Sources to the Foss Superfund Site Using Principle Component Analysis

By Daniel Haskell, University of Washington, Master's Candidate

The management of water resources is to ensure a reliable quantity and an acceptable quality of water for today, while simultaneously safeguarding our environmental resources for tomorrow. Pervasive synthetic chemicals have become a more pressing issue as we learn more about toxic exposure and its risks to human health. In order to correctly mitigate chemical loadings to our natural surroundings we must characterize the fate and transport pathways through the atmosphere, surface and ground water, and rivers as a holistic entity. In urban areas chemical fingerprints can play a significant role in mitigation if the pollutant source is unknown. My graduate research aims to analyze spatial fingerprints of different chemical species in stormwater outlets by using multivariate statistics and to evaluate how these techniques can be applied to a common manmade plasticizer, phthalate esters.

The Thea Foss waterway, a former multimillion dollar superfund site along downtown Tacoma, WA is the focus of this study. Extensive sediment cleanups (i.e. dredging, capping) have addressed multiple types of historical contamination. However, re-accumulation of phthalates after environmental cleanup has reached levels that exceed Washington State sediment management standards and pose a threat to the base of the

aquatic food web.

Phthalate esters have become an international synthetic chemical found in consumer products to make plastics more flexible and control fragrance volatility. Recent literature suggests phthalates may act as endocrine disrupting compounds (EDCs) at relatively high concentrations (Oehlmann, J), but this debate is ongoing. There are over 25 different types of phthalates of which 6 of the most widespread phthalates over the last 10 years were analyzed at the Center for Urban Waters in collaboration with the City of Tacoma Environmental Services. All phthalates are hydrophobic with a polar carboxyl group and have the affinity to partition onto humic and fulvic acids and sediment (Ko, F.C *et al*). In this study surface water samples were collected from stormwater outlets during storm and non-storm events from 2002 to 2010. Sediment samples were also collected by boat throughout the Thea Foss Waterway from 2002 to 2010 throughout the year. Six phthalate esters were analyzed using Gas Chromatography – Mass Spectrometer (GC-MS) techniques. The phthalates measured to determine sample concentration were Bis(2-ethylhexyl), Butyl Benzyl, Diethyl, Dimethyl, Di-n-butyl, and Di-n-octyl. Positive Matrix Factorization (PMF) was suited best for sediment samples. Hierarchical cluster



Figure 1: Thea Foss Waterway. 2008 (green) and 2010 (red) bars represent proportion change of only Bis(2ethylhexyl) phthalate concentration in sediment. Orange bullets represent independent surface water outlets (surface water data not shown).

analysis was executed to group water samples and locate relationships.

Positive Matrix Factorization was conducted using EPA PMF 4.1 multivariate statistical software. PMF has been used extensively for source apportionment work in previous literature (Kim, E *et al* 2003 and Lee, P. *et al* 2003) and was first described by Paatero (1997). PMF uses multivariate factors which are broken down into factor contributions and factor profiles as two matrices from nonnegative data. In this case the approach is used to analyze a 2-dimensional matrix with the following equation:

$$X = GF + E$$

Here, the variable "X" is the matrix of the measured phthalate values. The values "G" and "F" are the factor matrices that need to be determined, with variable "E" as the error or residuals for each phthalate species. The residuals are constrained to be nonnegative values. To solve the 2-dimensional PMF formula, each data point is individually weighted from the error matrix "E" using the least square fit line and minimizing the sum of the weighted residuals.

Source apportionment analysis of spatial fingerprints of different phthalate species in stormwater outlets were conducted for baseflow and stormwater data sets. There were a total of 7 surface water outfalls and over 10 years of data, making it over-determined and suitable for PMF analysis. Source apportionment for sediment locations were measured in over 77 different sediment sites of varying distance from the Thea Foss waterway coastline. Stormwater sampling was naturally limited to episodes of rain events with baseflow data being measured on dry events. Over a ten-year period, the total number of sampling observations was less than the total number of sediment sampling sites. This was due to a large percentage of phthalates falling below the median detection limit of the GC-MS. This rendered the data under-determined and will be more suitable for Hierarchical cluster analysis. Hierarchical cluster analysis will be performed using R statistical software in order to group similar site locations together to investigate similarities between relative phthalate concentrations that were localized surface water outfalls. Hierarchical cluster analysis will also be performed on the sediment data for relationship grouping.

The approach for multivariate factor analysis was conducted for each phthalate ester. Statistical data was taken from seven outfalls around the Thea Foss waterway, with a range of different sediment locations varying from distance from the shoreline (see Figure 1). Bis(2ethylhexyl) phthalate sediment concentration is illustrated at several sites throughout the Thea Foss waterway and in the Wheeler-Osgood slip. During the 2008 sampling year (red bar), sediment concentration averaged 43ug/kg with a range of 37 to 128ug of Bis(2ethylhexyl) phthalate per kg of sediment. During the 2010 sampling year, these values tripled to an average concentration of 125 ug/kg, with a range of 44 to 730ug of Bis(2ethylhexyl) phthalate per kg of sediment. Stormwater samples were collected as grab samples at discharge outlets during rain events. Sediment samples were collected by boat using a van veen across dis-

tances from the shoreline. Data that fell below the median detection limit (MDL) was replaced with ½ of the MDL. Missing data was replaced with the concentration median of that site concentration for all sampling observations. A corresponding unique uncertainty value was given as a percentage of the MDL.

Four factors were chosen to specify the model for PMF analysis. Concentrations of Bis(2ethylhexyl) phthalate in baseflow data were calculated based on the product of the 4 loadings "F" and the 4 scores "G" generated by EPA PMF 4.1 software. The following equation was used to calculate the concentration of Bis(2ethylhexyl) at any given outfall x, date y:

$$C_{\text{outfall } x, \text{ date } y} = F_{\text{outfall } x, \text{ factor } 1} \times G_{\text{factor } 1, \text{ date } y} + F_{\text{outfall } x, \text{ factor } 2} \times G_{\text{factor } 2, \text{ date } y} + F_{\text{outfall } x, \text{ factor } 3} \times G_{\text{factor } 3, \text{ date } y} + F_{\text{outfall } x, \text{ factor } 4} \times G_{\text{factor } 4, \text{ date } y}$$

After several runs of EPA PMF version 4.1, the results indicated that 4 factor "loadings" were sufficient to determine the average concentration of Bis(2ethylhexyl) phthalates in base flow data. The data was plotted as spatial profiles (data not show). PMF analysis showed 3 outfalls (orange spheres on Figure 1) that were defined to have independent sources of phthalates from other surface water outfalls (purple spheres on Figure 1). The independent surface water outlets plotted as orange spheres on Figure 1 were located at the western entrance at the Tacoma narrows bridge, the furthest eastern tip of the Wheeler-Osgood waterway slip, and the western shoreline of the Thea Foss waterway. PMF analysis indicated the approximate chemical loading for these outfalls in basewater were 9 ug/mL, 5ug/mL, and 14 ug/mL of Bis(2ethylhexyl) phthalate, respectively. The other 4 surface water outlets plotted as purple spheres on Figure 1 were interpreted as more dependent with respect to their spatial profiles; indicating that they may share similar sources of phthalates (data not shown). Localized high sediment concentration did partially reflect two of the three independent storm water outfalls. However, more valid data is needed to interpret the sediment concentration across the Thea Foss waterway.

## CONCLUSION

Positive Matrix Factorization was shown to be a useful tool for source apportionment for Bis(2ethylhexyl) phthalate in baseflow data. The analysis concluded that three outfalls were found to have independent sources of phthalates from other stormwater outfalls. However, there are many pitfalls when working with phthalate data. Several phthalates measured in sediment fell below the median detection limit and needed to be frequently extrapolated with the median of that sample site across 10 year observations. In water samples, phthalate detection limits were also challenging to recover based on their chemical structure and hydrophobicity. Nevertheless, with a robust dataset PMF is a useful tool for the interpretation of chemical data spatially and temporally and can serve as a tool for source apportionment for all types of environmental media.

*Daniel Alejandro Haskell received one of the two AWRA Washington State Chapter fellowships in December 2011. He is currently studying Environmental Engineering at University of Washington and expects to complete his Master's work in March of 2012.*

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## Editor's Note: Celebrate Water Resources in March!

Jenny Saltonstall, AWRA-WA Newsletter Editor

### NATIONAL GROUND WATER AWARENESS WEEK

National Ground Water Awareness Week was launched thirteen years ago by the National Ground Water Association (NGWA) to educate the public about the importance of ground water and water well stewardship. Groundwater Awareness Week spotlights one of the world's most important resources - groundwater.

Ground water in Washington State is vital as a source for drinking water, for irrigation and aquaculture, and provides essential baseflows to many of surface water resources during the drier summer and fall months. As published by the Groundwater Protection Council in 1999, in Washington State, about 61% of the people in Washington obtained their drinking water from ground water sources. Slightly more than half (51%) of the state's public water supply customers depended solely on groundwater from nearly 16,500 groundwater-based public water supply systems. About 10% were served by private individual wells in mostly rural areas. More recent statistics on Washington Statewide groundwater use are in the works – the State Office of Drinking Water tracks community and municipal water supplies and is compiling ground water usage statistics. <http://www.doh.wa.gov/ehp/dw/default.htm>

Groundwater is essential to the health and well-being of humanity and the environment. Whether you're on a public water system or a private well, whether you are a health care official, policymaker, regulator, or someone interested in water resources or the environment in general — groundwater awareness is important to you.

The Washington Department of Ecology provides data on wells throughout the state. Data includes well locations and well logs. <http://apps.ecy.wa.gov/welllog/>.

Additional information on groundwater rules and regulations, water quality and other relation information and links on groundwater is available on the Ecology groundwater site: <http://www.ecy.wa.gov/programs/wg/grndwtr/>. The United State Geological Survey (USGS) also maintains a website with Washington groundwater information. <http://wa.water.usgs.gov/>. Additional general information about ground water resources can be found on EPA's groundwater page: <http://water.epa.gov/type/groundwater> and NGWA's water well stewardship for well owner's page: [www.wellowner.org](http://www.wellowner.org).

### WORLD WATER DAY March 22, 2012

United Nation's World Water Day 2012 campaign is "Water and Food Security." International World Water Day is held annually on March 22 as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources.



Water and Food Security – 22 March 2012  
[www.unwater.org/worldwaterday](http://www.unwater.org/worldwaterday)  
Coordinated by 

A local organization, Partnership for Water Conservation (PWC), is celebrating World Water Day with a benefit showing of the film **The River Why**. All proceeds from the showing of this film benefit the work of the PWC, a nonprofit 501(c)(3) dedicated to increasing water conservation in Washington State. Tickets are \$20 & include pre-movie party (appetizers, contest, door prizes) at 6 p.m. with film at 7:00 p.m. at the Uptown Theater, 511 Queen Anne Ave North, Seattle, additional info at: <http://www.partners4water.org/index.html>

From the United Nation's World Water Day website:

*There are 7 billion people to feed on the planet today and another 2 billion are expected to join by 2050. Statistics say that each of us drinks from 2 to 4 liters of water every day, however most of the water we 'drink' is embedded in the food we eat: producing 1 kilo [2.2 pounds] of beef for example consumes 15,000 liters [~4,000 gallons] of water while 1 kilo of wheat 'drinks up' 1,500 liters [~400 gallons].*

*When a billion people in the world already live in chronic hunger and water resources are under pressure we cannot pretend the problem is 'elsewhere'. Coping with population growth and ensuring access to nutritious food to everyone call for a series of actions we can all help with:*

- follow a healthier, sustainable diet;
- consume less water-intensive products;
- reduce the scandalous food wastage: 30% of the food produced worldwide is never eaten and the water used to produce it is definitively lost!
- produce more food, of better quality, with less water.

*At all steps of the supply chain, from producers to consumers, actions can be taken to save water and ensure food for all.*

## Membership Renewal Time!

It's time to renew your WA-AWRA membership. If you attended our 2011 annual conference, your membership has been paid for the year. Membership fees remain at \$35 for the year and a renewal form is provided in this newsletter for your convenience! You won't want to miss the activities that the board is planning for this year!

**RENEWAL:** Please pay online at <http://waawra.memberlodge.org/> or by check (payable to AWRA-WA Section) with your Name, Organization, Phone, Address and Email to: AWRA-WA, PO Box 2102, Seattle, WA 98111

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# UW AWRA Student Mixer Meeting Review: Elwha Dam Removal: Past, Present, and Future

Talk Given By: Sarah Morley, Northwest Fisheries Center, Summarized by Megan Kogut, University of Washington

On January 24, 2012, UW students and members of the state chapter came together for the annual AWRA student-professional mixer, held at the UW's Waterfront Activities Center. The annual AWRA-WA student mixer for the UW Student Chapter was an unusual success in several ways.

First, the topic was fascinating and, for many, of special historical importance. Sarah Morley, Research Ecologist in the Watershed Program of the Fish Ecology Division of the Northwest Fisheries Center, presented "Elwha Dam Removal: Past, Present, and Future". Ms. Morley gave an overview of the Elwha Dam history pre-dam. She also showed several maps of the Elwha watershed and put the Elwha River dams in perspective: they block anadromous fish from over 90% of the watershed, which has had profound effects on their success rate as populations in the Elwha River. Ms. Morley discussed some of the complications of removing the dams, including the mostly adverse effects of releasing the huge sediment load accumulated over years behind the dams. She also provided an overview of what wildlife researchers, both aquatic and terrestrial, are measuring to assess the recovery of the watershed during and after the release of impounded water and sediment. The removal of the Elwha dams is a historical precedent, so scientists are especially keen to learn from this process for potential application of findings to future dam removals elsewhere.

Second, the meeting was particularly well-attended; over 45 students, state section board members and professionals were on hand. The UW Student Chapter advertised the event more broadly than usual, including using the listserv for the relatively new UW College of the Environment. The usual draw of pizza and drinks for free for UW Student Chapter members or \$5 for non-members is surely in part why so many attended. But



the rather unusual and hot topic was very likely as significant a draw.

Most of the attendees were students, but about half of the State Section board members were on hand to meet students. Board members also announced and advertised the dinner meeting sponsorships for students. The board is emphasizing more student involvement in section activities, including dinner meetings. Towards this goal, board members stated that the State Chapter dinner meetings are just as interesting as the student meetings, and they also have free food.

The State Section is also now supporting two student-professional mixer events each year, so another mixer event may occur in late spring. This event will be announced in this newsletter and on the State Section and UW Student Chapter websites. Stay tuned!

*More information on the UW Chapter of the American Water Resources Association is located on the web: <http://students.washington.edu/awra/>*

## 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 **newsletter** is published several times per year 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 10.

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## Call for Nominations for Outstanding Contribution to Washington's Water Resources

The AWRA, Washington Section plans to honor an individual at the State AWRA Conference which will be held in Seattle this year. This award will be presented at the conference's Award Luncheon for outstanding contribution to the water resources profession in the State of Washington. Current State Chapter members are encouraged to send in a nominating letter for themselves or another candidate. In addition to identifying a nominee, the letter must contain an explanation of how the candidate specifically meets the criteria listed below. An individual need not satisfy all of the criteria to win the award, and other appropriate factors brought up in the nomination letter WILL be considered.

- Outstanding contribution or achievement in the water resources field (broadly defined) in the State of Washington.
- Leadership, so that others are enabled, inspired or organized to advance the understanding, management or wise use of water resources.
- Degree of innovation.
- Interdisciplinary or bridge-building qualities.

Any person may be nominated for this award, but only current State Chapter members may submit a nomination. The nomination letter or e-mail must be received by **July 15, 2012**. The winner will be awarded a handsome plaque commemorating the honor. In addition, the AWRA Board will make a donation to a water-related, nonprofit organization of the individual's choosing. You may submit your nomination to:

Pete Sturtevant  
Awards Committee  
c/o CH2M HILL  
PO Box 91500  
Bellevue, WA 98009-2050  
[psturtev@ch2m.com](mailto:psturtev@ch2m.com)

There are lots of people out there working hard to protect and enhance Washington's water resources. This is your chance to bring some much-deserved recognition to one of them.

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## 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

AWRA-WA Dinner Meeting Student 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](mailto:colleen.rust@hartcrowser.com) or at 206-826-4652.

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## Call for Student Mentors and Information for Students

### STUDENT MENTORING

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](mailto:mbkogut@gmail.com) with questions or a short biography for posting on the AWRA website. For more information about mentoring, see: <http://waawra.memberlodge.org/>

### 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 would like more information, please contact: **Colleen Rust** at [colleen.rust@hartcrowser.com](mailto:colleen.rust@hartcrowser.com), or at 206-826-4652.

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## Upcoming Events

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### **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, <http://waawra.memberlodge.org/>. National event information is posted at [www.awra.org](http://www.awra.org).

**Local Dinner Meetings** – <http://waawra.memberlodge.org/>

**March 26-28, 2012** AWRA National's 2012 Spring Specialty Conference in New Orleans, LA: GIS and Water Resources VII

**June 25-29, 2012** AWRA National's 2012 Summer Specialty Conferences, Denver, CO: Contaminants of Emerging Concern in Water Resources II: Research, Engineering, and Community Action (June 25 – 27) and Riparian Ecosystems IV: Advancing Science, Economics and Policy (June 27-29)

### **Other Water Resources Events**

#### **USGS Tacoma Water Science Seminars:**

<http://wa.water.usgs.gov/seminar/seminar.html>

**UW Water Seminar 2012**, free and open to the public, Tuesdays, Anderson Hall 223, 8:30 to 9:20a.m

[http://www.cfr.washington.edu/courses/waterseminar\\_Wtr12.pdf](http://www.cfr.washington.edu/courses/waterseminar_Wtr12.pdf)

**March 24, 2012** Water for People 17<sup>th</sup> Annual Water for Life Reception, Seattle Center Pavilion, Seattle, WA <http://www.pnws-awwa.org/>

**April 11, 2012** Washington Hydrologic Society Dinner Meeting: Climate Change issues on the Nooksack River Location: USGS Office in Tacoma, WA <http://wahydro.org>

**April 18, 2012**, UW Water Symposium, Seattle. NHS Hall, University of Washington. Hosted by Center for Urban Waters [www.urbanwaters.org/](http://www.urbanwaters.org/)

**April 30-May 4, 2012**, National Water Quality Monitoring Council 8<sup>th</sup> Conference, Portland, OR. <http://acwi.gov/monitoring/conference/2012/index.html>

**May 9, 2012** Washington Hydrologic Society Dinner Meeting: Legislative Update; Location: to be determined. <http://wahydro.org>

**May 20-24, 2012**, Land Grant & Sea Grant National Water Conference, Portland, OR. [www.usawaterquality.org/conferences/2012/default.html](http://www.usawaterquality.org/conferences/2012/default.html)

**June 13-14, 2012**, NEBC Oregon Brownfields Conference, Portland, OR. [www.nebc.org](http://www.nebc.org)

**June 21-22, 2012**, NEBC Washington Brownfields Conference, Spokane, WA. [www.nebc.org](http://www.nebc.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](http://www.swwrc.wsu.edu/conferences.asp)

Seattle ASCE Water Resources:

[http://seattleasce.org/committees/water\\_resources.html](http://seattleasce.org/committees/water_resources.html)

Northwest Fisheries Association:

<http://www.northwestfisheries.org/index.asp>

Center for Environmental Law and Policy: <http://www.celp.org/>

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*The Board of AWRA-WA seeks to provide through this newsletter a full range of views on water resource issues. Opinions expressed in this newsletter do not necessarily reflect the views of individual Board members, the section membership, or their employers.*

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## 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 <http://waawra.memberlodge.org/>.**

**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.

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