AWRA newsletter
Washington Section
AMERICAN WATER RESOURCES ASSOCIATION

JANUARY 2014

PRESIDENT'S NOTES

By Megan Kogut, WA-AWRA President

Happy 2014! I thank very much all of the 2013 board members, volunteers, members and sponsors who've helped AWRA-WA be poised for another great year.

I'm excited to be president this year after being AWRA-WA vice-president, treasurer, conference co-chair and various committee chairs. I've been with the board for five years. I joined this board for three reasons: I wanted to contribute to a nonprofit cause, I was seeking a potential career boost, and I wished to work with a board that works well as a team. Since there is so much to share about all three reasons, I focus on the first reason below and save the other two reasons for later newsletters.

Our mission as a non-profit organization is ambitious and straightforward, and I'm proud to be a part of it. We provide education and informational exchanges to further policy development regarding important water resources issues; we involve professionals, students and others from all disciplines in activities that promote broad discussion and understanding of water resources issues; and we recognize excellence in water resource education, management, and research.

While there are many professional water resources organizations in the state of Washington and beyond, our organization is perhaps uniquely poised to include all types of professionals from regulatory agencies, municipalities, consulting companies, academic institutions and non-profit organizations, along with students and interested members of the public, to consider all important issues related to water in the state of Washington and the Pacific Northwest.

We carry out our mission with an annual conference, five or six dinner meetings plus two UW student chapter mixer meetings a year, a bimonthly newsletter, two student scholarships, and an annual professional award. The conference, meetings and newsletter all benefit immensely from the board's large network of professionals. We strive to bring you the latest important and cutting edge information directly from their sources, including agency and non-profit employees, academics and engineers. In many cases, we bring you news long before it manifests itself as new policy or action. The student scholarships are our opportunity to fund the best local water-related student projects, important for supporting future water professionals and especially important when academic funding is tight. And the professional award is traditionally focused on those who have worked under the radar and/or over long periods of time to achieve significant progress in water policy and protection. We find great satisfaction in celebrating relatively unsung heroes.

2013 was a great year in all ways for the AWRA Washington Section mission. And since there's every reason to believe that 2014 will be as great or greater, I'll add a few specifics.

The 2014 conference planning is already underway, and we're taking many cues from the overwhelmingly positive comments we received from 2013 conference participants in person and in our survey. Regardless of the topic picked, our conferences always bring insights and details to you from the people who are in the thick of policy development and enforcement, science and engineering solutions.

We have our first newsletter out the door quickly, and it includes many reports on the busy end of year for AWRA-WA as well as a timely and forward-thinking article that shows early results of voluntary metering in the Skagit River Basin.

And after the student mixer at the end of January, we'll start announcing another round of great dinner meetings. We'll likely have more breaking news related to policy and engineering as well as a few more general interest topics to attract interested members of the public.

If you'd like to be involved in any of these efforts, or have questions or suggestions, feel free to email me at mbkogut@uw.edu.

IN THIS ISSUE:

UPCOMING DINNER MEETING CO-SPONSORED WITH THE UW STUDENT CHAPTER – JANUARY 30TH

The annual winter mixer with the AWRA professional chapter and the University of Washington student chapter will take place on January 30th, 2014 from 6 to 8 p.m. at the Waterfront Activities Center on the University of Washington, Seattle campus. **Dr. Joe Cook**, a faculty member of the Evans School of Public Affairs at the University of Washington, will be the speaker for the event. His research uses tools from economics to inform environmental and health policy, often in economically-developing countries. His focus is primarily on water and sanitation policy, water resources management, stated preference methods, and vaccine policy. His talk, **"The role of economic analysis in water resource management"**, will survey some of the ways in which economic logic and tools are used to inform how we allocate and manage scarce water resources. The talk will also discuss an important new proposal for the state - the Yakima Basin Integrated Plan - and how economic analysis is being applied to it. Dinner will be provided and starts at 6 p.m. The talk will start at 7 p.m. RSVP: http://students.washington.edu/awra/2014_mixer_RSVP.html

EXEMPT WELL USE IN SKAGIT COUNTY – RESULTS FROM A VOLUNTARY METERING PROGRAM: CARPENTER-FISHER AND UPPER NOOKACHAMPS SUB-BASINS

By Carl Einberger, Golder Associates Inc.

BACKGROUND

The Washington State Department of Ecology (Ecology) established minimum instream flows for the Skagit River Basin on April 14, 2001 to protect streamflow levels and associated fish habitat [Washington Administrative Code (WAC) 173-503]. Water uses established after this date are subject to curtailment when instream flow levels are not met, including permit exempt wells allowed under Revised Code of Washington (RCW) 90.44.050. In the Skagit Basin, exempt wells are typically used by single family rural homes. Although exempt wells are not subject to permitting, they can be subject to interruption when instream flows are not met under WAC 173-503.

In 2003, Skagit County challenged the 2001 rule and asked Ecology to establish a non-interruptible water supply for rural exempt wells. Ecology amended the Skagit Instream Flow Rule in May 2006 and established reservations of water to provide non-interruptible but limited water supplies. As part of the rule amendment, specific groundwater reservation quantities were established for tributary sub-basins, including the Carpenter-Fisher and Upper Nookachamps sub-basins that are the subject of this study (**Figure 1**).

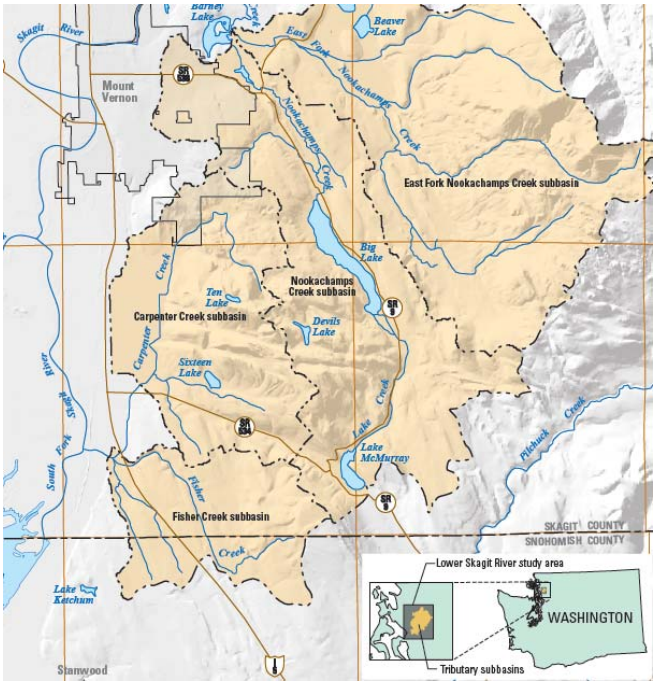


Figure 1. Study Sub-Basins (map source: USGS, 2009)

The amended rule established an assumed use of 350 gallons per day (gal/day) for each exempt well, but allowed for additional evaluations of actual water use to be considered. The number of new exempt wells allowable under the reservation quantities in the Carpenter-Fisher and Upper Nookachamps sub-basins rapidly approached the amended rule limits. In response to concerns on reservation limits, a field study of actual groundwater use was initiated in late 2011 through a voluntary metering program jointly funded by Skagit County, Ecology, and the City of Anacortes. Data from this study are available for 2012 and 2013. This article focuses on 2012 data, as collection of final 2013 data is still in progress.

It is also of note that on October 3, 2013, the Washington Supreme Court overturned the 2006 Skagit Instream Rule Amendments following a legal challenge regarding the amended rule's validity brought by the Swinomish Tribe. Through an agreement between Ecology and the Swinomish Tribe, use of exempt wells already approved through the amended rule and the now invalid groundwater reservations will not become interruptible. As part of the agreement, Ecology has agreed to develop mitigation alternatives for these exempt wells. Although the measurements of exempt well use obtained through this study are no longer relevant for the now defunct water reservations, the metering data can be used to support determination of necessary mitigation requirements for exempt wells.

VOLUNTEER NETWORK

In Fall 2010, Skagit County conducted a survey in the Carpenter-Fisher and Upper Nookachamps sub-basins to select volunteer candidates for a well metering study. Eighteen volunteers participated in this study and had meters installed. The meters were set to measure hourly water use data throughout the study. The volunteer residences range from mobile homes to large households, with lot sizes ranging from 0.25 acre to more than 5.5 acres. The data collected by the meters were downloaded through onsite visits conducted on a periodic basis.

REPRESENTATIVENESS OF METERED PROPERTIES

A statistical analysis was completed to evaluate the representativeness of the 18 metered properties relative to other parcels in the Carpenter-Fisher and Upper Nookachamps sub-basins. There are many statistical techniques to estimate the properties of a larger population from a smaller sample drawn from that population. This implicitly requires that the smaller sample be statistically representative of the larger population. Since this study relied upon volunteers, it was important to determine if the volunteered parcels were representative of the water usage expected for the parcels in Carpenter-Fisher and Upper Nookachamps sub-basins that were part of the monitoring network.

There are many factors that potentially relate to water usage: the number of bathrooms, the improved and unimproved land value, the type of structure (mobile home, rural single family dwelling, etc.), the age of the dwelling, the building value, the total acreage, living area, and the number of bedrooms, among others. These variables were available for both the metered and unmetered parcels. To the extent that these factors in the metered properties are similar to the unmetered parcels, they are potentially representative of the unmetered parcel water usage.

A K-Nearest Neighbor (KNN) cluster analysis was used to assess whether the monitored properties were representative of the residential parcels that were not part of the monitoring network. The 18 monitored parcels were compared with 1,155 unmonitored parcels within the Carpenter-Fisher and Upper Nookachamps sub-basins. The KNN cluster analysis indicated that the monitored parcels are representative of the parcels within the Carpenter-Fisher and Upper Nookachamps sub-basins that were not part of the monitoring program. The percentages of unmonitored parcels that were most similar to a specific monitored property were also evaluated. The evenness in the percent similarity in all but three parcels shows that the monitored sample is broadly representative of the unmonitored data.

LOCAL CLIMATIC CONDITIONS IN 2012

The Washington State University Mount Vernon weather station received average precipitation relative to the period of record until late June, when a short period of higher than average rainfall occurred until early July. At that time a very dry period occurred, with little rainfall from early July through mid-October (one of the longest dry spells in the last 16 years). From July 24 through October 11, only 0.15 inches of rainfall were recorded. This suggests that for properties where significant outdoor water use occurred, this period should represent a relatively high level of total use compared to a typical year.

METERING RESULTS

A graphical summary of the mean monthly average of daily groundwater use for all properties combined is presented in **Figure 2**. Average daily use ranged from a low of 107 gal/day to a high of 410 gal/day for all the properties combined during the peak outdoor watering season, with an average overall water use of 176 gal/day annually. Of this amount, indoor use was estimated to account for 131 gal/day annually.

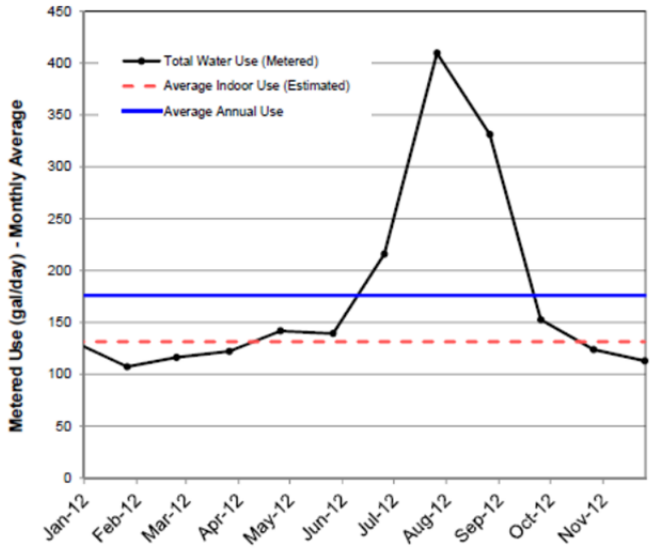


Figure 2. Mean Daily Water Use (Monthly Average – All Properties)

Table 1 presents a summary of all the metering data and shows the range in groundwater use observed in the individual properties. Twelve of the properties had distinguishable irrigation that could be estimated. Two examples of significant differences in individual property water use are illustrated by **Figure 3** (Property 1), and **Figure 4** (Property 4). Property 1 has a single occupant and typically has low water use, with an annual average daily use of 56 gal/day. Water conservation fixtures are in place and no irrigation occurs. Peak water use occurred in January, which is apparently a 'holiday peak'. Peaks were observed in the detailed water use records for several properties around key holidays. Property 4 has seasonal occupancy by three people, with extensive landscaping present. **Figure 4** illustrates the significant irrigation that occurs at this location. As a result Property 4 has the highest annual average daily use (463 gal/day), even though it is only seasonally occupied.

Limited data on specific exempt well metering data are available in Washington State. This study will be updated with 2013 data, and can potentially support determination of mitigation needs for exempt wells, evaluation of the effects on water use of any limitations on outdoor watering that may be considered, and encouraging water conservation by providing residents data on the range of water use observed.

Carl Einberger is a hydrogeologist with over 25 years of experience working on water resource projects in Washington State. He has been actively involved in addressing groundwater management issues in Skagit County since 2004. He can be reached at 206-316-5644 or ceinberger@golder.com.

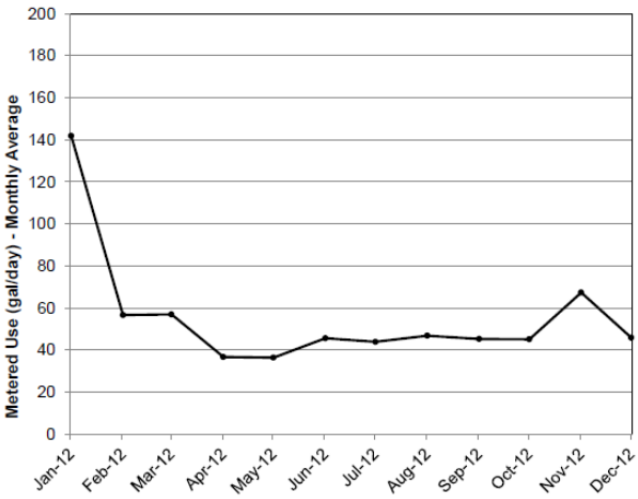


Figure 3. Mean Daily Water Use (Monthly Average – Property 1)

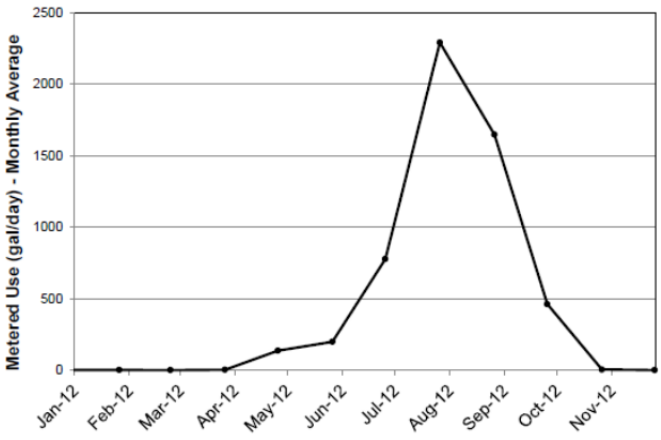


Figure 4. Mean Daily Water Use (Monthly Average – Property 4)

Table 1. Summary of Exempt Well Metering Data

						Weekly Average of Total Daily Use During Peak Period of Outdoor Use (gal/day)					
Property No.	Annual Average Daily Use (gal/day)	Average Annual Indoor Daily Use (estimated) (gal/day)	Average Annual Outdoor Daily Use (estimated) (gal/day)	Minimum Monthly Average of Total Daily Use (gal/day)	Maximum Monthly Average of Total Daily Use (gal/day)	8/11/2012	8/18/2012	8/25/2012	9/1/2012	9/8/2012	9/15/2012
1	56	Not Estimated	Not Estimated	36	142	52	44	39	55	50	34
2	328	206	122	152	1074	1084	1100	1163	1117	1042	1009
3	95	85	10	58	169	183	189	135	120	160	77
4	463	Not Estimated	Not Estimated	0	2293	2371	2941	1924	2332	3015	1138
5	163	119	44	84	388	291	614	329	482	250	226
6	105	89	16	75	218	281	110	136	133	149	100
7	181	Not Estimated	Not Estimated	81	242	28	217	245	108	120	180
8	148	Not Estimated	Not Estimated	72	226	88	82	83	90	60	86
9	145	Not Estimated	Not Estimated	126	176	126	109	140	152	118	136
10	183	Not Estimated	Not Estimated	142	226	277	189	173	165	174	201
11	197	180	16	0	498	359	483	483	515	652	481
12	188	Not Estimated	Not Estimated	172	222	179	207	209	159	213	132
13	106	75	31	15	260	227	438	199	134	186	46
14	154	93	61	0	463	548	466	463	473	571	452
15	88	84	4	61	133	133	217	63	104	126	132
16	165	146	19	120	286	291	296	236	275	274	220
17	104	96	8	64	176	268	247	117	16	91	132
18	297	270	26	156	516	397	467	283	568	534	352
All Properties	176	131	33	107	410	399	468	357	389	432	285

GET INVOLVED!

Planning for the 2014 AWRA-WA Section conference is now underway! We invite our membership to join our 2014 Conference Committee. Participation in the **Conference Committee** provides a good opportunity to interact with members of the AWRA Board and other AWRA Washington Section members in a fun, collaborative setting. There are numerous different ways to help out and we welcome you to contribute your skills and interests to support this event. We are currently brainstorming conference themes and session topics, and pinning down a fall 2014 conference date. If you have interest in joining our team, contact **Allison MacEwan**, conference co-chair, at aam@shanwil.com or at 206-695-6691 to learn more.

CALL FOR WATER RESOURCES ARTICLES AND ANNOUNCEMENTS

Submissions are welcome for the March 2014 newsletter. The article submittal due date is March 15, 2014. Announcements for water-related events are also welcome and are due March 15, 2014. 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!

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 Winter Quarter hosted by the student chapter, and other subsidies. **Inter-organizational 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 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.

FELLOWSHIP WINNERS ANNOUNCED

By Stan Miller, WA-AWRA Section Board Member

A primary mission of the WA-AWRA is to foster the understanding of water resources management as an interdisciplinary science. Our student fellowship program provides the Section with the opportunity to encourage students to become the future leaders in water resources management by supporting promising individuals with a financial incentive to pursue their studies – the AWRA Student Fellowship Award. Because AWRA recognizes the interdisciplinary nature of water resources management, the Section seeks students who are applying a range of disciplines to their research problems for the fellowship program.

Since the early years of its existence, the Washington State Section has provided support through two fellowships to a "full-time graduate student completing advanced degree in an interdisciplinary Water Resources subject." Three criteria, the interdisciplinary nature of the course of study and research; the potential application of the work to current needs in water resources management; and the effectiveness of the response in communicating research objectives, form the basis for the review of fellowship applicants.

One of the awards is named in honor of former WA-AWRA board president and the organizer of the student chapter at the University of Washington, Rod Sakrison. The other award is presented to a second student chosen as the best submittal from among the remaining applicants. The award winners each receive a cash award of $2,000 and 1 year of membership in the National Association.

This year's winners were selected from a field of six applicants. There was one applicant from EWU, CWU, WSUA and WWU and two applicants from the U of W.

This year's Sakrison award for a member of a Student Chapter goes to **Brian Henn** from the U of W. Brian is a PhD candidate in Civil and Environmental Engineering. His Dissertation topic is: Development of Statistical Tools for Estimating Air Temperature, Precipitation and Snowpack in Mountain Watersheds.

The second award goes to **Hossein Sedeghi** from WSU. Hossin is also a PhD candidate. He is part of the WSU program in Land, Air, Water Resources and Environmental Engineering. His Dissertation topic is: Center Pivot Lateral Speed Adjustment Based on Weather Parameters.

A panel of five WA-AWRA section members reviewed the applications. The reviewers evaluated the applications on the basis of the relevance of the applicant's project to current water resources research needs, the interdisciplinary nature of the project and the applicant's ability to communicate.

AUTOMATIC SPEED ADJUSTMENT OF CENTER PIVOTS FOR IMPROVED IRRIGATION UNIFORMITY AND EFFICIENCY

By Hossein Sedeghi, Washington State University Ph.D. Candidate, Student Fellowship Winner

Irrigation of agricultural crops is by far the largest use of water in the arid West. The most common method of irrigation in the Pacific Northwest is sprinkler irrigation (73% of irrigated acres), and the most popular sprinkler irrigation method is the center pivot (62% of sprinkler acres) with 3.2 million irrigated acres. A pivot adjusts the amount of water applied by varying its rotation speed. Slower rotation speeds result in greater application depths per pass. A typical center pivot with mid-elevation spray drops attached will achieve an irrigation application efficiency (Ea) of 80-85%. This means 15-20% of the applied water is lost before it can be caught and stored on the soil surface. The most important factor affecting these losses are evaporation and wind drift losses (EDLs), sometimes called spray losses.

Most people are aware that irrigation application efficiency is highest when the air temperature and wind speed are low and humidity is high. Typically the fastest a center pivot can complete a full rotation is in about 1½ days but 2-4 days per rotation are common. Over this time period there will be a wide variety of changing weather and microclimate conditions. The day-night differences are especially stark. Because of this some areas of the field will receive more water than others resulting in poor irrigation application uniformity. Consequently, the grower must apply more total water everywhere in order to adequately irrigate the areas of the field that received less water. On the other hand, when all areas are adequately irrigated, some areas of the field will receive too much water resulting in leaching of water and nutrients. Non-uniform watering will also result in non-uniform plant growth costing the grower in overall yield and loss of quality. Most center pivots are also used to apply fertilizers and pesticides with the irrigation water. Poor irrigation uniformity therefore results in poor application uniformity of these fertilizers and pesticides and leads to additional expenses, crop damage, and environmental degradation.

The objective of this research is collect data sufficient to develop an algorithm that will estimate irrigation application efficiency from a limited set of measured weather parameters. This algorithm can be used by the pivot controller, which would also record the measured weather parameters, to automatically adjust the center pivot travel speed to correct for changing conditions due to day/night differences and changing weather conditions. To develop and validate this model, we will have to measure the irrigation application efficiency of a center pivot under various weather conditions.

RESEARCH METHODOLOGY:

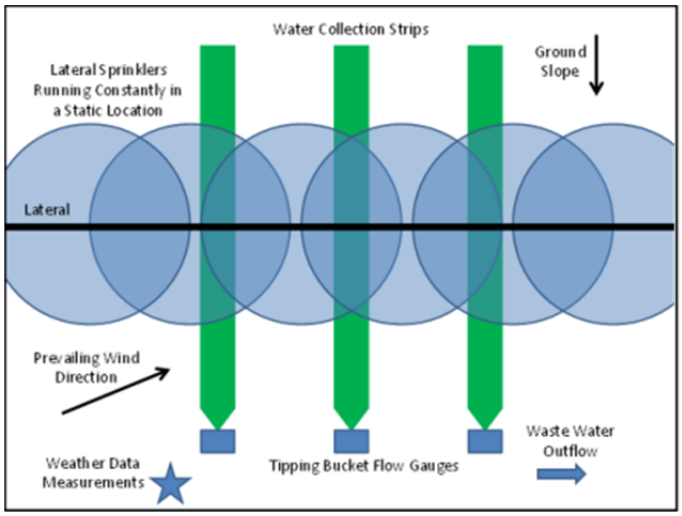
Irrigation application efficiency is defined as the amount of water that leaves the sprinkler nozzles divided by the amount of water that makes it to the surface for storage in

the soil. Therefore two components have to be measured to calculate the application efficiency:

1) the total water emitted by the sprinkler(s), which will be directly measured using fixed volume container and a stop watch, and
2) the water that makes it to the ground surface. Water emitted from the sprinkler should be constant due to pressure regulators on each nozzle.

To capture the changing amount of water that reaches the soil surface, three rectangular impermeable strips have been constructed underneath a stationary experimental linear move system (**Figure 1**) using boards and a large tarpaulin. The water intercepted by these long strips will be directed to their outlet and measured using tipping bucket flow meters (**Figure 2**). These tipping buckets will be connected to a data logger in order for each strip's discharge to be continuously recorded to give instantaneous application efficiency. A sonic anemometer, a temperature and relative humidity sensor, and a pyranometer will also be connected to the datalogger to measure environmental variables at a short distance up-wind of the site (**Figure 1**). Measurements will be taken under various weather conditions and at different times of day over the entire growing season to collect a variety of data to develop and test the model.

After an initial characterization using a flat surface, non-transpiring (artificial) plants will be set up inside the strips to better estimate the interception and evaporative water losses from a crop canopy. In the second season differing nozzle sizes and sprinkler types will be investigated to help approximate the effect that these have on the modeled irrigation application efficiency.



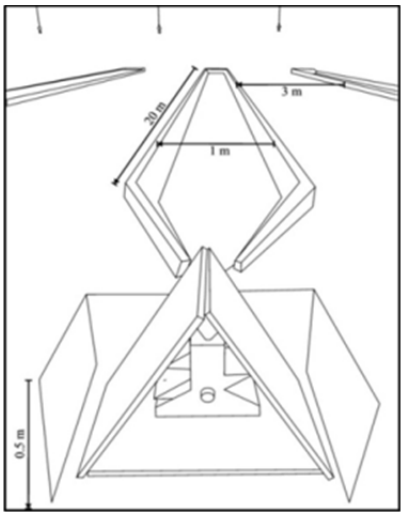


Figure 1. Experiment Layout

INTENDED OUTCOMES AND IMPACTS

- Growers will realize higher yields since large areas of the field are no longer over, or under irrigated due to poor uniformity on account of changing application efficiency.
- When all plants are irrigated uniformly there will be improved crop size and maturity uniformity across a field. This will result in the grower's ability to maximize returns especially when growing vegetables like potatoes, carrots, or onions.
- Water management will become simpler for growers since they won't have to start pivots at odd times of day and night to prevent the pivot from consistently being in the same area of the field at a particular time of day which leads to over or under irrigation in those areas of the field.
- Decrease of loss of water and nutrients to leaching in areas that are necessarily over-irrigated in order to adequately irrigate all areas of the field.
- Energy savings from decreased need to run pumps and rotate pivots for additional passes. These energy savings will be particularly noticeable in high lift operations.
- Under water-short conditions, conserving water creates opportunities for alternative uses for the water including irrigating additional acreage and fish habitat restoration.
- Improved application uniformity of fertilizers and pesticides through chemigation.

Hossein Sedeghi received one of the two AWRA Washington State Chapter fellowships in December 2013. He is a Ph.D Candidate in the Land, Air, Water Resources and Environmental Engineering Program at Washington State University, and plans to complete his research in Spring of 2015. He can be reached at: s.hossein.sadeghi@email.wsu.edu.

Figure 2. 0.5 L/tip tipping bucket flow gauge measurement

REVIEW OF NOVEMBER MEETING: THE WILD AND SCENIC RIVERS ACT & PROTECTION EFFORTS IN NORTH CASCADES

Presented by Wendy McDermott, Associate Director, Washington Conservation Programs, American Rivers
Review by Sarah Corbin, WA-AWRA Member

Wendy McDermott, the Associate Director of the American Rivers' Washington Conservation Programs, presented on the Wild and Scenic Rivers Act (WSRA) and the American Rivers protection efforts that are underway in the North Cascades.

The WSRA was signed into law by President Lyndon Johnson in 1968 and aimed to maintain the free-flowing condition of rivers and protect river water quality. The act created the National Wild and Scenic Rivers System, which has placed approximately 12,598 river miles, or 0.25% of the nation's rivers under protection. The WSRA has no direct regulatory authority on non-federal lands, and state and local governments maintain land use and regulatory authority in these areas.

When a river is given a Wild and Scenic designation, it's "outstandingly remarkable values" (ORVs) are protected and enhanced. These values can include recreation opportunities, fisheries, wildlife, culturally significant sites, historic buildings, and scenic views. Existing uses on the river are allowed to continue, although water projects harmful to the river's values, such as dams, are prohibited. The Wild and Scenic designation also establishes a 1/4 –mile protected riparian buffer on both sides of the river and requires that a Comprehensive River Management Plan (CRMP) be developed to address issues involving the river's protection.

Washington State currently only has six designated Wild and Scenic rivers, the **Klickitat, Skagit, Sauk, Cascade, Suiattle,** and **White Salmon** and over one hundred rivers in our state have been determined eligible for designation by the U.S. Forest Service or the national Park Service. By comparison, Oregon has 59 Wild and Scenic rivers. American Rivers is currently working to protect several rivers in the North Cascade Mountain range, including the Middle Fork Snoqualmie and the Pratt River in the Alpine Lakes Wilderness, Illabot Creek in the Skagit basin, and the South Fork, Middle Fork, and North Fork of the Nooksack River. The "outstandingly remarkable values" identified in the Middle Fork Snoqualmie and Platt Rivers include hiking, fishing, kayaking, hunting, and rafting; habitat for black bear, mountain goat, black-tailed deer, and elk; cutthroat trout fisheries; and low elevation stands of old-growth forest. Illabot Creek, a tributary to the Skagit River, has one of the largest wintering bald eagle populations in the lower 48 states; contains habitat for federally listed threatened Chinook, steelhead, and bull trout, as well as for pink, Coho and Chum; and is known as one of the most productive bull trout streams in the Skagit River Basin. The proposed sections of the Nooksack River include spring calving areas for black-tailed deer and elk, a mountain goat winter range, and identified Spotted Owl Habitat Areas; scenic views of Mt. Shuksan and Mt. Baker, the 100-foot Nooksack Falls, and white water rapids; and several structures on the National Register of Historic Places.

Mt. Shuksan in the North Cascades

Legislation designating the Middle Fork Snoqualmie and the Pratt River as Wild and Scenic Rivers was passed by the U.S. Senate in 2013 and has yet to go through the U.S. House of Representatives Committee on Natural Resources. The Illabot Creek bill was passed by the Senate in 2013, has passed the House Committee on Natural Resources, and now awaits a vote in the House of Representatives. The campaign to designate the South Fork, Middle Fork, and North Fork of the Nooksack River is currently focused on the education and community-support building phase.

White Salmon River. Photo Jane Chorazy, U.S. Fish & Wildlife

More information regarding the WSRA and ongoing efforts in the North Cascades can be directed to Wendy McDermott at wmcdermott@americanrivers.org.

REVIEW OF DECEMBER MEETING: PUGET SOUND PARTNERSHIP PROGRESS AND DIRECTIONS

Presented by Brian Walsh, Planning Manager, Puget Sound Partnership
Review by Jason McCormick, WA-AWRA Section Board Member

In 2007, the Puget Sound Partnership (PSP) was created by the Washington State Legislature as the organization to lead citizens, governments, tribes, scientists, and businesses to restore Puget Sound by 2020. The PSP is governed by a Leadership Council, an Ecosystem Coordination Board, and a Science Panel. Membership to those boards consists of representatives from both the U.S. and Canada that report to Federal agencies, Tribes, State agencies, county and local governments, nonprofit organizations, and citizens at large. The Partnership has been designated by the Legislature to achieve the following:

- Set science-based regional priorities for Puget Sound;
- Accelerate implementation of priority actions; and
- Ensure accountability for results.

The beneficiaries of PSP's work include the communities and citizens of the U.S. and Canada with clean marine and freshwater environments, marine mammals, fisheries, shellfish, and ecosystem processes as a whole. Although Puget Sound appears to be beautiful place, it has been plagued in recent years with a series of low oxygen marine events, corresponding fish kills, loss of salmon and steelhead populations, shellfish contamination, and decreasing marine mammal populations.

To tackle the difficult challenge towards restoration, the PSP developed a scientific framework for recovery that is based upon the Open Standards for Conservation. Scientists have developed theories for restoring degraded ecosystem components. As we conduct restoration projects, monitoring and adaptive management will be used to test these theories and make adjustments. The idea is to be more systematic in our approaches and move beyond "acts of random restoration".

In 2009, the PSP released its "Action Agenda", which focused on goals, indicators, and restoration targets for Puget Sound. A lot has happened since 2009, and the PSP has been working towards updating the Action Agenda to account for successes, identify new needs, and refine restoration targets in 2013 and 2014. In 2013, the PSP published the "State of the Sound 2013" which measures recovery in two distinct ways:

1. The status of the recovery effort, as measured by how well partners are implementing the 2012 Action Agenda.
2. The health of the ecosystem, as measured by progress on the Puget Sound Vital Signs.

Here are the results that were reported:

3 of the Vital Signs are making progress toward recovery

- Shellfish beds / 2,888 acres reopened
- Estuary restoration / 2,260 acres restored
- Swimming beaches / percent meeting standards has improved

3 of the Vital Signs showed no change

- Chinook salmon
- Eelgrass
- Stream flow

1 of the Vital Signs was mixed

- On-site sewage systems

3 of the Vital Signs are worsening

- Orca population / down from 86 to 82 individuals
- Herring / spawning biomass unchanged or declining
- Marine water quality / Marine Water Condition Index slightly lower

There is a tendency in Puget Sound to funnel restoration funding through mission-specific agency programs – sometimes referred to as "silos". Often such an approach does not achieve broader benefits that could be achieved with a more holistic approach. The Puget Sound Partnership is looking at current funding approaches to see if there are opportunities to move beyond the current silo approach. Recent floodplain work in the Green River (the System-Wide Improvement Framework or SWIF) provides an example where public safety, economy, community and habitat goals are fully considered in an integrated fashion.

In 2014, the PSP will be refining the previous Action Agenda document to include implementation strategies, updated Local Integrating Organization profiles and near term actions, and expert recommendations on ocean acidification. In addition, the current list of Near Term Actions for Puget Sound recovery will be reviewed and updated, as necessary. We thank Brian Walsh for his time and look forward to hearing more about PSP's successes in the near future. Brian can be reached at brian.walsh@psp.wa.gov.

Left Photo: Black Oyster Catcher; Right Photo: San Juan Island Coast; Photos by Brian Walsh.

NOTES FROM 2013 AWRA NATIONAL CONFERENCE IN PORTLAND, OREGON

By Felix Kristanovich, WA-AWRA Section Board Member

I had the privilege of attending the AWRA National four day Conference in Portland, Oregon. The conference started with a presidential reception Sunday before the conference, where I had a productive chat with other conference organizers from AWRA Oregon, Washington, and Idaho sections. Portland weather was either foggy or raining, as expected for this time of the year.

The highlights of the Conference included an enlightening dinner at the hotel JB Lounge, where Boy and Bean, a local jazz favorite, performed a variety of songs, while various seafood specialties were served; there was no dancing, but this event was as an excellent networking venue. Another conference highlight was the AWRA awards luncheon where the organization recognized some distinguished AWRA professionals for their achievements in water resources. The most notable announcement was retirement of Earl Spangenberg, a founder of the AWRA IMPACT publication.

Significant parts of the Conference were devoted to development of the Integrated Water Resources Management (IWRM) and its application in climate change, groundwater governance, land use planning, water banking and transactions, and several sessions on the IWRM strategic applications in Oregon and Washington. There were several special sessions devoted to hydrologic impacts from climate change, Columbia River Treaty, Ecosystem Services in Floodplain Management, study of applications of energy in water, and advances in the Low Impact Development (LID) techniques. A special symposium addressed issues associated with methodology and technology of the IWRM modeling for decision support. There were also general good sessions on floods and droughts, water quality, wetlands, climate change, surface water, groundwater, sediment and geomorphology. As always, there was time to discover something new; for example finding out that the US Army Corps of Engineers has been developing a 2-dimensional version of a popular HEC-RAS model.

The conference was extremely well attended and broke attendance records (over 500 people), despite most recent government furloughs that affected attendance of some federal employees. It was really easy to socialize at many designated conference session breaks, and at additional socializing events during the Monday night Opening Reception, Tuesday lunch book signing event (including presentation by Bill and Rosemary Alley), and during the conference grand lunch event on the third day. Mr. Steven Stockton, director of the US Army Corps of Engineers Civil Works, gave an excellent keynote speech during the Opening Session. That session also included a taped recording of welcoming remarks by Oregon governor John Kitzhaber. On a personal note, I was on the organizing committee, and moderated five different conference sessions, so I missed some of other important sessions. You cannot be everywhere, as there were six parallel sessions throughout the conference.

2014 SPONSORSHIP OPPORTUNITIES

By Scott Kindred, WA-AWRA Section Board Member

ANNUAL WA-AWRA SPONSORSHIP

Now is the time to consider sponsoring the WA-AWRA to receive the full annual benefit of your sponsorship. In addition to the traditional benefits associated with the annual state conference, we now offer benefits throughout the entire year, including free memberships and recognition of your company at dinner meetings, in emails and newsletters, and on the website. Further details are available on our website. By becoming a conference sponsor, you will earn the recognition and gratitude of water resource professionals throughout our state. We also encourage our corporate sponsors to consider other opportunities for their voice to be heard by writing articles for the newsletter or presenting at one of our dinner meetings or the state conference. We welcome your feedback to make our events as interactive and valuable as possible for our members. If you have any questions or need additional information, contact Scott Kindred: skindred@aspectconsulting.com.

CORPORATE DINNER MEETING STUDENT SPONSOR

WA-AWRA 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 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 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 WA-AWRA Dinner Meeting Student sponsorship includes 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.

SPOKANE RIVER AND SPOKANE VALLEY RATHDRUM PRAIRIE (SVRP) AQUIFER WATER RESOURCES MANAGEMENT PLAN

Announcement From Washington State Department of Ecology Water Resources

OVERVIEW OF RULE DEVELOPMENT

The Department of Ecology (Ecology) is proposing to adopt a water management rule for the Spokane River, from the Idaho border to Lake Spokane. The purpose of an instream flow rule is to protect and preserve water in streams for "instream resources" including fish, wildlife, recreational uses, wastewater management, and hydropower. An instream flow rule will also give the river a water right, much like we give individuals, farms and municipalities. The rule will apply to the mainstem of the Spokane River and that portion of Spokane County within the boundary of the Spokane Valley Rathdrum Prairie Aquifer. This rule would not include Hangman Creek, or the Little Spokane River which already has an instream flow rule.

Once an instream flow is set Ecology will use the rule as a regulatory flow threshold to determine whether there is water to withdraw for new uses while still protecting fish and other instream resources. The rule would apply to new uses of surface and groundwater within the Washington portion of the Spokane Valley Rathdrum Prairie Aquifer. The rule would lay down a structure to protect stream flows while still allowing for new growth through the development of existing water rights. For detailed information about what is included in this rule making process please see the related rule-making documents.

Get Involved: Public Participation and Information:

- Email Notices (ListServ): http://listserv.wa.gov/cgi-bin/wa?A0=SR-SVRP-WRMP
- Timeline of Rulemaking Steps required in state law: http://www.ecy.wa.gov/programs/wr/rules/557-tl.html
- Links to all official rule adoption documents: http://www.ecy.wa.gov/programs/wr/rules/557-docs.html

Contacts

***Ann Wessel**, Rule writer, 360-715-5215, ann.wessel@ecy.wa.gov and **Rusty Post,** Watershed lead, 509-329-3579, rusty.post@ecy.wa.gov*

TIMELINE FOR RULE DEVELOPMENT

Date	Action
1/21/2014	CR-101 Filed – Announces the rule making
1/21/2014	Developing, preparing rule proposal package for rule making
Date TBD	Public open house and presentation of preliminary draft rule
Date TBD	CR-102 Filed - Proposed rule text and supporting documents Beginning of public comment period.
Date TBD	Public hearing.
Date TBD	End of public comment period.
Date TBD	Reviewing comments and preparing the adoption package
Date TBD	Adopt, file, publish the rule, send out Rule Adoption Notice.
Date TBD	Rule goes into effect
Date TBD	Other implementation dates if appropriate.

PREPROPOSAL STATEMENT OF INQUIRY

Subject of possible rule making: This rule making will propose a new rule, Chapter 173-557 WAC - Water Resource Management Program for the Spokane River and Spokane Valley Rathdrum Prairie (SVRP) Aquifer. The proposed rule will set instream flow levels for the Spokane River, and establish regulations for managing future out-of-stream uses of water from the Spokane River and SVRP Aquifer. An amendment to Chapter 173-555 WAC – Water Resources Program in the Little Spokane River Basin, WRIA 55, may be proposed, if necessary, solely for the purpose of ensuring regulatory clarity since the geographic areas of applicability of these rules will partially overlap.

Statutes authorizing the agency to adopt rules on this subject: Chapter 90.22 RCW, Minimum Water Flows and Levels; Chapter 90.82 RCW, Watershed Planning; Chapter 90.54 RCW, Water Resources Act of 1971; Chapter 90.03 RCW, Water Code; Chapter 90.44 RCW, Regulation of Public Groundwaters; Chapter 18.104 RCW, Water Well Construction.

Reasons why rules on this subject may be needed and what they might accomplish: The possible adoption of this rule is needed to protect and preserve instream resources in the Spokane River including fish, wildlife, recreation, water quality, navigation and aesthetics. The established instream flow levels will serve to determine whether additional water is available for future allocation beyond the needs of existing water rights and will assist Ecology with managing future water withdrawals from the Spokane River and Spokane Valley Rathdrum Prairie Aquifer. A rule will also establish Washington State legal interests in the water as it may relate to any future adjudications or interstate apportionment.

Identify other federal and state agencies that regulate this subject and the process coordinating the rule with these agencies:
http://www.ecy.wa.gov/laws-rules/wac173557/d1311.pdf

Process for developing new rule: The process for developing the new rule will build on the watershed planning processes for Water Resource Inventory Areas (WRIAs) 55/57 and 54, and other existing processes for the management of water resources in the region, including water quality permitting, water resource studies, and hydropower dam relicensing. Draft rule language will be shared with watershed planning units, Washington Department of Fish and Wildlife (WDFW), Tribes, the City of Spokane, regional water purveyors, the State of Idaho, and other interested parties. Ecology will hold an open house prior to filing the CR-102 and proposed rule language. A focus sheet, web page, and public notice will be developed to explain the elements of the proposed rule and announce the date of the open house. A press release and email will be used to distribute the information. At the open house staff will be available to explain the proposal and answer questions.

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 with questions or a short biography for posting on the AWRA website.

STUDENT DINNER SPONSORSHIP

WA-AWRA 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.

ANNOUNCEMENTS

AWRA Events

The Washington Section of AWRA holds regular dinner meetings, including a social hour, dinner, and a speaker.

State Events – http://waawra.org/

Regular Dinner Meetings – see http://waawra.org for up-to-date schedule

National Events – www.awra.org

Other Water Resources Events

USGS Tacoma Water Science Seminars:
http://wa.water.usgs.gov/seminar/seminar.html

Links To Other Local Water Resources Related Associations

American Fisheries Society-Washington British Columbia Chapter:
http://wabc-afs.org

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

Northwest Environmental Business Council: http://nebc.org

Pacific Rivers Council http://pacificrivers.org/

Puget Sound Partnership http://www.psp.wa.gov

River Restoration Northwest http://www.rrnw.org/

Society of Inland Northwest Environmental Scientists http://www.spokanesines.org/

Seattle ASCE Water Resources:
http://seattleasce.org/committees/water_resources.html

Washington Water Research Center: www.swwrc.wsu.edu/conferences.asp

Washington Hydrologic Society http://wahydro.org

Washington Water Trust: http://washingtonwatertrust.org

The Water Report: http://thewaterreport.com/

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

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2014 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.

2014 Membership Dues: $35.00.

Preferred Method: Pay via Paypal on our website: http://waawra.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.