

THE AQUAHOMAN

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1// From the
Director's Desk

4// Legislative
Update

5// Projects for
Funding 2011

7// WRAB Wrap Up

8// Feedback
Input Meetings

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From the Director's Desk:



OWRRI and NIWR: A Partnership worth Nurturing

NIWR (the National Institutes for Water Resources) is a 501(c)(4) non-profit organization that represents the nation's 54 State and Territorial (District of Columbia, Puerto Rico, Virgin Islands, Guam/Federated States of Micronesia/Northern Mariana Islands) Water Resources Research Institutes. The OWRRI is a dues-paying member of that organization.

A legitimate question could be asked: Why should OWRRI remain a member of NIWR? Here are some of the reasons.

NIWR Represents Institutes to Congress and Executive Branch Agencies

The operation of the Institutes is authorized by the federal Water Resource Research Act (which created the Institutes in 1964) and is funded through the House and Senate Appropriations Committees. NIWR hires a professional lobbyist who maintains positive relations with these Congressional committees as well as with various Executive Branch agencies. At each year's NIWR conference, our lobbyist provides advice to Institute Directors before we visit our State's House and Senate members to ask for their support. He also keeps us abreast of relevant initiatives and other areas of interest to Directors throughout the year. Whenever I am in Washington, our lobbyist accompanies me to visit with Oklahoma's Congressional staff and other parties who are interested in what OWRRI and other Institutes are doing.

NIWR also hosts a public website and operates the Institute Performance Reporting System (IPRS) that solicits information on Institute activities. This information allows NIWR to generate reports and responses to queries that demonstrate how the research, education, and outreach activities of Institutes – individually, regionally, and nationally – improve the nation's water supply.

NIWR Represents Institutes in Other Organizations

The two primary organizations in which NIWR is active are the Association of Public and Land Grant Universities (APLU) and the Universities Council on Water Resources (UCOWR). NIWR is accorded permanent chairmanship of the Water Section within the Bureau of Natural Resources within the APLU, which allows Institute influence the federal water research agenda. NIWR also co-sponsors the annual meeting of UCOWR, which is attended by water researchers across the country. The NIWR President delivers a welcome address at each UCOWR conference and participates in recruiting contributors to its journal. Finally, NIWR participates on ad hoc initiatives such as the National Water Quality Assessment Program and the Subcommittee on Water Availability and Quality, which provides other opportunities to influence the national water research, education and policy agenda.

NIWR Provides Timely Information to Institutes Concerning Research Funding Opportunities

NIWR hosts an annual conference in Washington each February to which all Institute

Directors are invited and almost all attend. At this three-day meeting, we listen to presentations by various federal agencies and Congressional representatives concerning research priorities, trends, and funding opportunities. Institute directors also share their insights and recommendations with each other in various panels and informal discussions.

NIWR Encourages Interstate, Transboundary Partnerships

NIWR is organized into eight regions; OWRRI is a member of the Great Plains Region. However, partnerships can occur outside of these regions as well. For example, OWRRI joined with Texas State University's River Systems Institute to form the Consortium for Watershed Excellence in 2007. We successfully won an EPA grant to study pathogen risks in the Red River basin above Lake Texoma. In 2010, we invited the Institutes in Arkansas, New Mexico, Louisiana, and Texas (at Texas A&M) to join in a renamed South-Central Consortium for Watershed Excellence. We are currently exploring research initiatives concerning the water-energy nexus, evaluation of the effectiveness of best management practices, and coordination of shared water quality databases.

OWRRI also joined with the Institutes in Minnesota, South Carolina, and Arkansas in a research project awarded by the Institute for Water Resources (IWR) within the US Army Corps of Engineers to study adaptive management of watersheds at Corps installations – the first grant awarded by the IWR to NIWR Institutes. This study is ongoing.



Dr. Focht presents at the 2011 NIWR annual meeting

NIWR Increases the Visibility of Institute Research

NIWR has recently instituted the IMPACT Awards program. This prestigious award recognizes the research project that best improves the nation's water supply. The 2007 Amendments to the federal Water Resources Research Act requires that Institutes focus their research on improving water supply. The IMPACT Awards program is designed to bring credit to the project that promises the greatest potential to improve water supply as well as to the Institute sponsoring that project.

NIWR Provides Opportunities for Institutes to Improve Their National Reputations

NIWR is governed by a 13-member Board of Directors elected from among the Institutes within each of the eight NIWR regions, one who serves as an at-large representative, and four who are elected as NIWR officers (President-Elect, President, Past President, and Secretary-Treasurer). The NIWR Board thus provides ample opportunity to undertake leadership activities that raise the visibility and reputation of those Institutes whom the Board members represent.

OWRRI is fortunate to have had an opportunity to take advantage of these opportunities. In 2006, I was elected to the Board as the representative of the Great Plains Region, which includes the Institutes in Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri, Arkansas, and of course Oklahoma. In 2008, I was elected as President-Elect – the first time that an OWRRI Director had been elected to the Executive Committee. A President-Elect, I chaired the 2009 NIWR conference and recruited Congressman Frank Lucas to deliver the keynote address, who discussed the recently enacted Farm Bill and the important role that water resources play in ensuring the health and productivity of American agriculture. In 2009-2010, I served as NIWR President and am now mid-way through my term as Past-President.

During my tenure on the Board and its Executive Committee, I co-developed (with the Director of Washington's Institute) the IMPACT Award program, co-developed (with the Director of Wisconsin's Institute) NIWR's first strategic plan, revised NIWR's bylaws, developed NIWR's Institute Performance

Reporting System, defined new Board positions of Secretary-Treasurer and At-Large Representative, and delivered presentations at the annual meetings of APLU, UCOWR, and the Western States Water Council. I met with staff of several Congressional and Executive Branch agencies, including the House Transportation and Infrastructure Committee, Water and Power Subcommittee of the House Natural Resources Committee, Senate Environment and Public Works Committee, Senate Interior Appropriations Committee, General Accountability Office, US Geological Survey, US Department of Interior, US Environmental Protection Agency, White House Office of Science and Technology Policy, Office of Management and Budget, National Science Foundation, National Oceanic and Atmospheric Administration, US Army Corps of Engineers, and Bureau of Reclamation.



United States Capitol

So Why Belong to NIWR?

NIWR was established in 1990 as the umbrella organization of all Water Resources Research Institutes (succeeding the National Association of Water Institute Directors that was formed in 1984). It provides a forum for Directors to interact and learn from each other, form partnerships, influence the national water research agenda, establish relationships with the staff of Congressional members and committees, work with staff from executive branch agencies, and serve in leadership positions on a national level. The OWRRI has been able to leverage its involvement to improve its state, regional, and national reputation in recent years. This brings credit to Oklahoma and raises our issues of concern on the national agenda. I hope that our Institute will continue to take a leadership role in NIWR in the years to come.

Don't forget about these exciting upcoming events!

**Water Appreciation Day at the
Oklahoma State Capitol - March 9th**

World Water Day - March 22nd

**20th Annual Oklahoma Clean Lakes and
Watersheds Association Conference - April 7th-8th**

Earth Day - April 22nd

LEGISLATIVE UPDATE - MARCH 2011

Jeri Fleming

The Oklahoma legislature is again in session, and with over 2,000 bills to address, or not, they are quite busy. This year about 33 water-related bills have been introduced, but since the legislature has only been in session for three weeks most are still in committee and little or no action has been taken as of yet. Though 33 water-related bills are pending, only about 19 are worth mentioning right now. Many are just clarifying language or are shell bills (bills with no content yet).

Some bills of particular interest to water planning are bills that reflect what Oklahoma citizens have said during the State's water planning process. For example, two house bills House Bill (HB) 1328 and HB 1337 are very similar to ideas put forth during the planning workshops and town hall. They do differ somewhat in content but the ideas are similar. Each bill would establish 19 water basin districts and it would levy a severance fee on any water transported outside of a basin by a municipality of 200,000 people or larger that is more than 20 miles outside the basin. The money collected would be used for infrastructure improvements, tourism and recreation projects and incentives for economic development projects within the basin the water is being transferred from. These are certainly worth watching, as it would be a major change to how Oklahoma manages in-state transfers of water.

Another bill that is similar to ideas discussed during the water planning process is SB 596 titled the Oklahoma Water Center Act. The bill is similar to ideas generated that state agencies should work together more efficiently. This act would establish a water center comprised of the directors of the Oklahoma Water Resources Board, Oklahoma Department of Agriculture, Oklahoma Conservation Commission and Oklahoma Department of Wildlife. The House and the Senate would appoint two additional members. Duties of the center would be to serve as a science and research advisory council. They would provide advice and information to the Water Resources Board as it implements the comprehensive water plan. Several other duties are listed including, but not limited to, researching opportunities for collaborated research, infrastructure funding and resource protection. The bill also requires a water severance fee be set for water that is transferred outside the state of Oklahoma. The monies would be put in an Oklahoma Water Center Revolving Fund, and then distributed to public agencies for projects outlined in the bill.

Large-scale water transfers seem to be the focus of HB 1336. It would require legislative approval of any regular, temporary, seasonal or provisional ground or surface water permit in excess of 25,000 acre feet per year. SB 585 puts a moratorium on any temporary permits for municipal or public water supply use from a sensitive sole-source aquifer. The moratorium only applies to entities that are outside the boundaries of the basin or subbasin.

HB 1341, HB 1395 and Senate Bill (SB) 18 all address the previous moratorium on water sales. The House Bills gives an effective date of the bill, if passed as November 1, 2011 and the moratorium will run for five years. The Senate Bill extends the moratorium until January 1, 2012. It is not clear the intent of these bills considering Oklahoma worked to pass a more constitutionally sound water sale bill in 2009.



Oklahoma State Capitol

Senate Bill 418 and HB 1392 both address the issue of aquifer water trapped in an open pit mine. The bills would remove the exemption from groundwater regulation this water currently has. However, it limits it to waters trapped in mine in a sole-source aquifer.

Senate Bill 87 addresses the concern some citizens have expressed over the make-up of member-

ship to the Water Resources Board. The bill still requires that one member be from each of the congressional districts but would require the other members be appointed to ensure each quadrant of the state is represented. The quadrants are determined by the boundaries of I-35 and I-40 in addition to Tulsa and Oklahoma City.

Two Senate Joint Resolutions should also be watched. SJR 11 required the Oklahoma Water Resources Board and the Oklahoma Corporation Commission should manage our natural resources, water, oil and natural gas, in such a way as to protect Oklahoma first. This requires the OWRB and the OCC to ensure Oklahoma citizens and businesses needs are met before these natural resources are sold out-of-state.

SJR 24 addresses the issue of water reuse and directs the OWRB and Oklahoma Department of Environmental Quality to report to the legislature by January 1, 2013 the progress made on developing and implementing a water reuse policy.

Many of these bills may have their language changed as they come out of committee, or become dormant in the next few weeks. If you would want to track these and other water-related bills you can go the state legislature's website at <http://webserver1.lsb.state.ok.us/WebBillStatus/main.html> and click on Basic Search Form and enter the bill number. One new feature of the bill tracking system is you can now get email updates for the bills you want to follow. It is called the Legislative Electronic Notification System (LENS) and the link is <http://newlsb.lsb.state.ok.us/EBillTrack/logon2.aspx>. It is free to sign up and you can choose what you want to receive. This is a great tool to keep track of issues you want to follow.

2011 SPONSORED RESEARCH PROJECTS

Investigation of the Viability of Rainfall Harvesting for Long-term Urban Irrigation: Bioaccumulating Organic Compounds and the First Flush in Rooftop Runoff

Jason Vogel, Jason Belden, and Glenn Brown

Rooftop stormwater runoff can be both a resource and a problem. With increasing demand on Oklahoma's water resources, all sources of water are potentially valuable. Harvested stormwater can be used for irrigation, car washing, cooling, and even drinking if properly treated. If widely implemented, this could mean substantial water saving along with decreasing the stormwater volume entering surface water bodies which can be a significant cause of erosion. Furthermore, because it is usually captured close to the point of use, harvested stormwater has low associated infrastructure and transport costs.

However, rooftops can be significant sources of contamination. The asphalt and flame retardants used in roofing materials have been found in rooftop runoff. Atmospheric dust deposits can also contain significant amounts of contaminants such as heavy metals and bacteria. These could pose a threat to human and ecological health if they accumulate in soils that are irrigated with them for long periods of time, to say nothing of the threats they pose if they enter ground- and surface waters that serve as drinking water sources. Fortunately, these contaminants are largely washed off the rooftops by the first rain water that falls during a storm. If this "first flush" can be diverted elsewhere, the remaining runoff is relatively clean. However, the amount of water that needs to be diverted is not easy to determine.

This project will attempt to develop a site-specific estimate of the volume of the first flush based on the roofing material, roof orientation, and geographical location through continuous monitoring and analysis of contaminants found in the runoff throughout a storm event. It will also evaluate whether the contaminants from the roofing materials have the potential for long-term accumulation in soils from harvested rainfall used as urban irrigation.

Drought Monitoring: A System for Tracking Plant Available Water Based on the Oklahoma Mesonet

Tyson Ochsner, Jeff Basara, Brad Illston, Chris Fiebrich, and Albert Sutherland

Drought is a frequent and often costly problem for Oklahomans. Although most people think of drought as a lack of rain, measurements of rainfall alone are poor predictors of drought impacts, because soil characteristics also play an important role. A better predictor of drought impacts is the amount of water in the soil that is available for plant roots to absorb (referred to as plant available water).

This is the second year of this project that seeks to publish a daily plant available water map for drought monitoring in Oklahoma. It makes use of the capabilities of the Oklahoma Mesonet, the world's leading automated weather station network providing continuous, real-time data (including total soil moisture) from across the state.

During the first year of this project, soil samples were collected from all 120 Mesonet locations and analysis of these is ongoing. The properties of the soil at each site will be integrated with Mesonet soil moisture information to produce site-specific plant available water values. Next, a method will be developed for interpolating between the Mesonet sites. These values will then be made available on the internet as a map, refreshed daily.

The 2006 drought cost Oklahoma over \$500 million. Knowledge that plant available water is approaching critical minimum values, could allow farmers and ranchers to change production strategies to minimize losses.

Incorporating Ecological Costs and Benefits into Environmental Flow Recommendations For Oklahoma Rivers: Phase 1, Southeastern Oklahoma

Caryn C. Vaughn and Jason Julian

Providing a safe and sustainable water supply while also providing for economic growth and maintaining natural ecosystems is a serious challenge in Oklahoma, especially given its increasingly limited water resources. Accomplishing this will require consideration of both the economic and ecological costs/benefits of different water management strategies. Determining the ecological costs/benefits of in-stream flow regimes requires quantifying real, measurable ecological characteristics of rivers and determining how these change under various flow scenarios. This proposal will focus on rivers in southeastern Oklahoma because (1) water from these rivers is in high demand to meet water needs across the state; and (2) these rivers are known for their relatively pristine water, high biological diversity, and multiple endangered species, including several species of freshwater mussels (clams). These mussels are filter feeders and thus provide important ecosystem services in rivers, particularly water filtration and nutrient recycling. Mussel filtration and nutrient recycling capabilities are determined by water temperature which, in turn, is influenced by river flow rates. In addition, when mussel populations are adversely affected, it is likely that other aquatic species are at risk. Their high sensitivity to changes in flow regimes and water temperatures thus make freshwater mussels an early-warning test system for determining the ecological costs/benefits of environmental flow recommendations.

The research team will create a GIS-based model that uses incoming solar radiation, topographic and riparian shading, and flow and hydrographic data. This will be combined with filtration and nutrient recycling data gathered from various mussel species in the lab. By modeling changes in the health and functioning of the mussels as they respond to changes in atmospheric and water conditions, researchers will then be able to estimate the impact of various river flow regimes on the health of the river ecosystem as a whole. Subsequent phases of this study will apply similar techniques to other Oklahoma rivers.

And the winners are...



On the first Friday in January each year, 22 representatives of state, tribal, and federal agencies, as well as non-governmental organizations gather in Stillwater. They gather not just to complain about the weather, which is usually bad, but to help advance water resources research in Oklahoma. This year was different...the weather was good.



The OWRRI's Water Research Advisory Board (WRAB) met at the OSU Alumni Center on January 7th to select the three projects to receive funding from the annual research grants competition. The project proposals had already been reviewed by other researchers in the appropriate fields for scientific merit, likelihood of success, and potential for further funding. Board members read through the proposals and these reviews before the meeting. A committee of three Board members selects five of the eight proposers to make presentations to the full Board.



The representatives watched presentations from the five researchers hoping for \$50,000 for their project. The researchers had 20 minutes each to persuade the Board that their project was worthy of funding. The presentations were followed by questions from the board. If they ask questions, they are interested. No questions, means either they are not interested or they did not understand. Neither is good.



After the presentations, the Board voted by ballot. They were asked to choose the projects that best meet the needs of Oklahoma at this time. This year's proposals were all excellent and the decisions were not easy. Each member ranked their top five choices and the results were announced later that day.

This year's winners are Dr. Tyson Ochsner (Plant and Soil Sciences, OSU), Dr. Jason Vogel (Biosystems and Agricultural Engineering, OSU), and Dr. Caryn Vaughn, (Oklahoma Biological Survey, OU). See page ? for summaries of each project.

All WRAB meetings are open the public. More info about the WRAB and their next meeting is available at environ.okstate.edu/OWRRI/introduction.asp.

Now that the selections have been made, we are waiting on Congress to decide on funding for this program (and the rest of the federal government). Once that happens, the OWRRI and the OWRB can move forward with funding these projects.



Feedback and Implementation Meetings: Dates and Locations

As the Oklahoma Comprehensive Water Plan update process reaches its conclusion in 2011, the OWRRI and Oklahoma Water Resources Board would like to thank all of the people who have provided valuable input into the plan as well as those responsible for the substantial technical work that has been accomplished to date.

The draft plan should be available for review in late March. Beginning in April, the OWRRI will host a series of meetings designed to gather final public feedback and comments on the plan. The Feedback and Implementation Meetings will provide an opportunity for participants to contribute ideas on how to implement plan provisions. This is a critical step towards ensuring success of the OCWP. Comments will also be accepted through this website once the plan is available.

One meeting will be held in each of the thirteen OCWP watershed planning regions. Because the regions are not divided by political boundaries, one county may be in more than one region. Please look at the map below to determine your region. However, each meeting will be open to all, so if the date or location of a meeting doesn't work with your schedule, feel free to come to a meeting in another region.

All Feedback and Implementation Meetings will be held from 6 to 9 p.m. The format will be come and go. Staff from OWRB and CDM (the engineering firm contracted to perform the bulk of the OCWP's technical work) will be on hand to answer your questions. OWRRI staff will also be there to receive your comments.

If you would like to receive reminders about the upcoming meetings and other information about the OCWP, please join our mailing list by clicking [here](#).

We look forward to seeing you at a meeting!



**2011 Oklahoma Comprehensive Water Plan
Feedback and Implementation Meetings
Dates and Locations**

Mtg. #	Region	Community	Date	Site
1	Panhandle	Beaver	Tuesday April 19	Beaver County Fairgrounds - Pavilion
2	Southwest	Lone Wolf	Tuesday April 26	Quartz Mountain State Park
3	West Central	Clinton	Wednesday April 27	Custer County Fairgrounds
4	Upper Ark.	Enid	Thursday April 28	Garfield County Fairgrounds – Hoover Building
5	Middle Ark.	Tulsa	Tuesday May 3	OSU-Tulsa – B.S. Roberts Room
6	Grand	Grove	Wednesday May 4	Grove City Hall – Community Room
7	Lower Ark.	Stigler	Thursday May 5	Kiamichi Technology Center – Stigler Campus
8	Eufala	McAlester	Tuesday May 17	Southeast Expo Center
9	Southeast	Antlers	Wednesday May 18	Antlers Community Building
10	Blue Boggy	Coalgate	Thursday May 19	Coal County Fairgrounds
11	Lower Washita	Sulphur	Tuesday May 24	Murray County Fairgrounds
12	Beaver-Cache	Lawton	Wednesday May 25	Comanche County Fairgrounds – Prairie Building
13	Central	Oklahoma City	Thursday May 26	OSU-OKC – Student Center Conference Room North & South

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