

**MINUTES
of the
WATER RESOURCES COMMITTEE
Best Western Agate Beach Inn
Newport, Oregon
August 2, 2018**

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MEMBERS AND ALTERNATES PRESENT

ALASKA	David Schade Andrew Sayers Fay (via phone)
ARIZONA	Einav Henenson
CALIFORNIA	Jeanine Jones
COLORADO	Rebecca Mitchell
IDAHO	Jerry Rigby Mat Weaver
KANSAS	David Barfield Tracy Streeter
MONTANA	Jan Langel
NEBRASKA	Jeff Fassett (via phone)
NEVADA	--
NEW MEXICO	Tom Blaine Greg Ridgley
NORTH DAKOTA	Garland Erbele Jen Verleger
OKLAHOMA	--
OREGON	Tom Byler Jennifer Wigal
SOUTH DAKOTA	--

TEXAS

Jon Niermann
Kathleen Ligon

UTAH

Eric Millis
Norm Johnson

WASHINGTON

Mary Verner
Buck Smith
Mike Gallagher

WYOMING

Pat Tyrrell
Kevin Frederick
Steve Wolff

GUESTS

Ward Scott, Western Governors' Association, Denver, CO
Andrew Craddock, Central Arizona Project, Phoenix, AZ
Sue Lowry, Interstate Council on Water Policy, Cheyenne, WY
Brenda Bateman, Oregon Water Resources Department, Salem, OR
Phil Ward, Wards' Corner Consulting, Independence, OR
Dave Tuthill, Recharge Development Corporation, Boise, ID
Douglas R. Jones, Recharge Development Corporation, Boise, ID
Chaunsey Chau-Duong, Southern Nevada Water Authority, Las Vegas, NV
Doug Woodcock, Oregon Water Resources Department, Salem, OR
David Moon, The Water Report, Eugene, OR
Randy Hadland, YSI/Wylem, Olympia, WA
Carlee Brown, Colorado Water Conservation Board, Demver, CO (via phone)
Christopher Estes, Chalk Board Enterprises, LLC, Anchorage, AK (via phone)
Adel Abdallah, Western States Water Council (intern), Murray, UT (via phone)

WESTFAST

Roger Pierce, Federal Liaison, Murray, UT
Kevin Werner, NOAA Fisheries, Seattle, WA
Mindi Dalton, U.S. Geological Survey, Atlanta, GA
Doug Curtis, Bureau of Land Management, Washington, DC
Pat Lambert, U.S. Geological Survey, Salt Lake City, UT
Deborah Lawler, Bureau of Reclamation, Salt Lake City, UT

STAFF

Tony Willardson
Michelle Bushman
Sara Larsen
Cheryl Redding

WELCOME AND INTRODUCTIONS

Tom Byler, Chair of the Water Resources Committee, called the meeting to order, and requested introductions be made around the room.

APPROVAL OF MINUTES

The minutes of the meeting held in Arlington, Virginia on March 14 were moved for approval with no changes or corrections by Garland Erbele. David Schade seconded the motion. The minutes were approved unanimously.

SUNSETTING POSITION

WSWC Position #381 regarding Rural Water Supply Project/Infrastructure Needs was brought before the Committee as revised by the Executive Committee (under Tab C). Tony commented that the updates to the position recognize the outstanding obligation of the United States to complete some of the rural water projects. A motion to move the position forward to the Full Council for vote was offered by Eric Millis. The motion was seconded and unanimously passed.

PROPOSED POSITION

Tom Byler provided background in general terms on a proposed position regarding Endangered Species and State Water Rights. The notion is to encourage communication and collaboration between the federal government and states. Tony stated that endangered species and species conservation was Governor Mead's primary initiative as a former Chair of the Western Governors' Association (WGA). Senator John Barasso (R-WY), Chair of the Senate Environment and Public Works Committee, has now introduced Endangered Species Act (ESA) amendments, which are consistent with principles developed by WGA. The WSWC staff made comments informally to the Senate staff with respect to the amendments. They should recognize that in cooperative species conversation situations it pertains not just to the landowner, but also the water right holder. WSWC helped draft language in the bill adopt as the policy of 1982, to

resolve water resource issues and species conservation issues in concert with each other. The WSWC have not done much recently with ESA and has deferred to WGA on these matters.

The Water Resources Committee had no comments or questions on the position statement. A motion for the Committee to approve the position was offered by Jen Verleger. Pat Tyrrell seconded the motion. With no discussion or opposition, the item will be forwarded to the Full Council for approval.

WESTERN GOVERNORS' ASSOCIATION (WGA) ANNUAL MEETING REPORT

Ward Scott, WGA Policy Advisor, reported that in June 2018, the Western Governors passed twelve policy resolutions. He noted that many of the Governors will be leaving office, so they wanted to solidify the positions and have a good legacy of policy that the next round of governors can build on. One of the resolutions was a water management resolution with the basic premise that states have primary authority over the management and allocation of water resources within their boundaries. That resolution also emphasizes the importance of partnerships between states and the federal agencies, tribes, and local governments.

Over the last two years, WGA's primary focus has been to build a stronger state-federal relationship. This is important with water management, as with anything else. WGA has built out some principles on federalism and how that relationship should work. We have put together a Western Policy Network, which consists of associations of state officials. The Western States Water Council is involved along with WGA. The Network includes a very diverse group of 12-13 organizations who have been sharing information and ideas and have developed and signed coalition letters. One such letter was sent to Representative Rob Bishop (R-UT), in his capacity as Task Force Chairman for the House Speaker's Task Force on Intergovernmental Affairs. Many of the ideas presented in the coalition letters build out reforms for the state-federal relationship, including a model for consultation. The letter to Rep. Bishop will be sent on Friday, Aug 3rd. Rep. Bishop is working on legislation to put some of these ideas into statute. Many of these ideas are on paper, but they are not enforceable, nor honored very often. This is a genuine effort to make that relationship work.

We are also working on a letter on Section 401 that will be discussed during the Water Quality Committee meeting later this afternoon. WGA has sent some letters and been engaged with the developing committees on the legislation. WGA has been supportive of several provisions and ideas in two separate bills. Letters have been sent expressing support for a water transfers rule to be codified in WRDA. The Senate manager's amendment includes the water transfers rule in that language. WGA is trying to push that forward.

Western Governors commended the Senate Committee on Environment and Public Works on June 18, 2018 for its leadership in advancing S. 2800, America's Water Infrastructure Act of 2018. The outreach to Chairman John Barrasso (R-WY) and Ranking Member Thomas Carper (D-DE) also asked Congress to address issues of concern to the West, which include

providing federal agencies with the authorities necessary to combat aquatic invasive species and legislative codification of the EPA Water Transfers Rule.

The western governors are proponents of reauthorization of the National Integrated Drought Information System (NIDIS) Reauthorization Act of 2018 and sent an outreach letter on May 14, 2018. Additionally WGA has been vocal about supporting funding for NRCS's Snow Survey and Water Supply Forecasting Program, and finding ways to make the program more durable and more effective.

WGA has been engaged with some legal issues with water management. Western governors submitted comments on the rulemaking of the Army Corps of Engineers' "surplus water" or "water supply" rule in February 2017, and reiterated their position to the Corps in October 2017 when they were asked for feedback on regulatory reform. WGA was disappointed that the Corps did not reach out to the States on this issue because there are clear reasons to be opposed. States feel the rule would interfere with state allocation of water, particularly under the prior appropriation system. There is definitely not a "one size fits all" solution to water management. The difference between a riparian system and a prior appropriation system is very apparent when you look at how this rule would be implemented.

Ward delivered testimony on June 13, 2018, commenting on the Army Corps of Engineers' regulation of "surplus water." He asserted: "The Corps should consult with states, on a government-to-government level, to better understand the impacts the Proposed Rule may have on states' authority over water resources and ways in which the Corps can partner with states to effectively manage its projects and resources." As stated previously, the differences in the West are significant. This rule was not developed with communication with the States when it came out in 2016.

Federal Reserved Water Rights are being followed very closely. This issue will continue to gain momentum and there are potential impacts on western water management. The *Agua Caliente* case extended the reserved rights doctrine to groundwater, and the *Sturgeon* case in Alaska pushed the bounds of that doctrine and how the courts will apply it. So, we will be watching these cases closely.

Governor Ige of Hawaii, WGA Chair, announced his central policy initiative will be on biosecurity and invasive water species initiative. We are certainly learning more about the impacts of aquatic invasives on water management, infrastructure, and on systems and delivery. This will be WGA's focus under Governor Ige's leadership.

AMERICA'S WATER INFRASTRUCTURE AND THE PRESIDENT'S INITIATIVE

John D'Antonio, Deputy District Engineer in Albuquerque, New Mexico, and with the U.S. Army Corps of Engineers' (USACE) Programs and Project Management team, reported that he has been working on this initiative with the USACE Headquarters Infrastructure Team for

about eight months. The need for infrastructure is acute nearly everywhere. Many communities find themselves without enough federal funding to go along with the state and local funding.

The Administration is trying to seek long term reforms on how infrastructure projects are regulated, funded, delivered and maintained. The President has proposed a \$200B federal commitment to leverage a \$1.5 trillion overall investment in infrastructure. There are leveraging opportunities available when you submit for funding – how the credit subsidy works and how to leverage that funding into additional funding – you can see how to get to those numbers.

The infrastructure legislative principles were publicly released on February 12, 2018 and are posted at: <https://www.whitehouse.gov/wp-content/uploads/2018/02/INFRASTRUCTURE-211.pdf>. The Administration has also asked agencies to improve infrastructure delivery by pursuing changes that do not require legislation. The Corps' role is to streamline permitting and accelerate infrastructure project delivery. We are trying to support approaches that are innovative to finance our Nation's infrastructure needs.

There are over 400 Corps projects that have been authorized, but unconstructed. About 48% of those are flood risk management projects, 21% are for aquatic restoration, and 13% are navigation, and around 15% are for environmental infrastructure. The Corps does not have enough money to fund all of those projects. The Corps' budget is around \$6B per year. Looking at the amount allocated for new projects, there have only been about four projects started each of the last five years. The Corps is trying to get more money into the civil works process for implementation of projects through incentive grants and low interest Water Infrastructure Finance and Innovation Act (WIFIA) loans.

EPA has had a very successful WIFIA program patterned after the Transportation Infrastructure Finance and Innovation Act (TIFIA). The WIFIA program EPA has put into place sent out their initial notice of funding availability of \$25M. They were able to leverage that to \$2.3B worth of loans. If you consider that the maximum WIFIA loan is about 49% of the project costs and double that, there is about \$5B worth of projects that can be funded with a \$25M loan. The reason that is important is that if you have a third party, a non-federal entity, that is repaying the loan proceed, it doesn't go against the budget authority of the federal agencies. Right now, looking at our budget authority, we get "x" amount of money that we can apply to projects. If we are applying that money to a federally owned and authorized project, that entire budget amount is going to go against the amount received from Congress. Looking at the credit subsidy amount, allows a non-federal entity to come in and pay the proceeds of a loan. In the case of EPA, they have an easier time of it in than the end users, the water users, though their fees are paying for that loan.

We are looking at the authorities the Corps has and are trying to implement our own program that highlights our authorities, which are flood control, navigation, ecosystem restoration, and those types of projects. If you have a flood control project going into place, you have to have an assessment set up. Through the assessments, who is benefiting from the flood control project would essentially be the third party raising revenue that pays back those low

interest loans. The loans are usually for 30-35 years for large projects in order to make them affordable. With very large projects, you can save a considerable amount of money on just the loan rates. Many of the western states have severance taxes and oil and gas revenues. Trust boards are set up and the successful part of those programs is through leveraging local, state, and federal funding. It's nice to have funding at the State level, and the state can in turn go the federal level. Sometimes it takes just an extra bit of money in order to get the projects built that are ultimately needed.

The Corps initiative seems to be underway with three main categories – project financing, and budgeting processes, a focus on project delivery (how to make it quicker and easier), and permitting efficiencies (how to clear the way to get projects done quickly).

I believe at the February 2019 WSWC Water Infrastructure Symposium, we could focus and expound on the funding side of things with grants and loans. With the grant program, there was discussion of \$100B in incentive grants being applied to three different agencies: the Corps, DOT, and EPA to encourage non-federal investment in infrastructure projects. Fee retention authorizes user fee collection and retention under the Water Resources Reform and Development Act (WRRDA) Section 5014 Pilot Program. The public-private partnerships or “P3” projects would have the ability to authorize the retention of recreation user fees for facilities. This is important to tribal entities in New Mexico.

In addition, we are looking at ways to expand USACE authority to enter into long-term contracts. One of the big problems with financing projects is the piecemeal funding. The Corps is trying to obtain funding in five-year increments rather than on a yearly basis. When done on a yearly basis, the projects are started and stopped. When extended over a 20 year period, this can add millions of dollars of costs to the particular projects. If the Corps can expand their authority for longer term contracts, they can get much better bids from the contractors, and get things constructed much earlier.

Other things of interest with the legislative principles may be the revised budget policy for projects implementing the regionally preferred plan, instead of the National Economic Development plan. Sometimes local sponsors want a plan that they put in place for project delivery fees. There are a lot of sponsors that would be willing to put up additional funding or structure their financing a little differently so they can get projects built.

Further, to enhance project deliveries, the Corps' legislative principles include: (1) hydropower, with authority for commercial O&M activities at hydropower facilities; (2) project deauthorization, allowing authority to use a streamlined process for Civil Works projects; (3) contributed and advanced funds, authority to expand acceptance of funds to help speed up the design or construction processes; and (4) 902 cost limits, giving authority to allow for waivers by the Secretary of the Army. If the Corps exceeds a project construction estimate with inflation, they have to go through a burdensome review process, so this may improve the process. Lastly, (5) the Washington Aqueduct Divestiture, and giving the Corps authority to divest federal assets (e.g., Washington Aqueduct) that may be better managed by state, local, or private entities.

With respect to independent external reviews, we are delegating decision making down to the district level. This cuts out the step of getting approval from the division and having policy changes that take vast amounts of time. That iterative process not only took time, but also delayed projects.

James Dalton, Director of Civil Works, is pursuing improvements in funding, as well as the Corps' new Secretary, R.D. James. There is good energy forward in making these changes and also improvements in the permitting processes. John highlighted some of the improvements noting that NEPA review efficiencies are being introduced to streamline regulations and remove duplicative requirements.

John said he hopes to personally be involved in the Corps water supply issue. As a former western water manager, he believes the rule is primed for consultation. The Corps needs to figure out a way forward on this matter. Section 408 permissions will put the delegated authority at the district offices. The Section 408 permissions deal with existing projects that have been constructed, and changes happen along the way and the local sponsor wants to make a change. A cumbersome review process has been created over the years, and the Corps is trying to expedite such processes.

Questions

David Schade: When you're talking about the cost-benefit analysis, Alaska does not hit the radar blip. How can we get a little more equity?

John D'Antonio: There are provisions for smaller communities of about 25,000 or less, so that should help. With respect to the loans, you can cobble WIFIA projects together to leverage funding. It comes down to being as creative as you can. We are trying to put together some examples of small, medium and large projects and scenarios for how it might work. We need to reach out to the communities and provide a workable model for states to use at different scales.

Tony Willardson: You mentioned the success of the EPA WIFIA loan program. I believe at an ICWP meeting in Baltimore, Maryland you talked about a WIFIA loan and the ability to restructure the repayments with some flexibility, such that as their other loan payments became due, they could pay less off on their WIFIA loan, allowing them then to provide a more even schedule for their repayments. That flexibility was very important to them.

John D'Antonio: The Corps has an MOU with the EPA. The Corps was authorized to set up a program in 2015 at the same time as EPA, but the Corps did not move forward with it. We have to develop our own credit subsidy model. When we get into the particulars, and when I mentioned the \$25M turning to \$2.3B, it is almost a 1% credit subsidy. The TIFIA program projects that were funded, that number was closer to 10%. That is based on a risk assessment of payback value and how the Office of Management and Budget (OMB) evaluates that particular program. Right now, we have an A-129 process being performed now with a consultant. It has

implemented all of the prior subsidy programs for other federal agencies. This will be set up at some point. We may be a little bit more expensive because of the extra process in setting up the assessments. However, even at 2% or 3%, that leveraging is very important. There are processes that can be put into place. These are 30-35 year payback loans. The payback does not start until five years into the program. You can defer the payback, which gives time to build a project and institute the framework that you are charging for the payback.

Jennifer Wigal: This is a comment. I would encourage the Corps and others to work closely with the States. There are lots of different funding sources. If you were to draw a Venn diagram, there is some amount of overlap and stuff that is special about what is being funded. For some of these projects, you're looking at leveraging multiple funding sources. Some of these vary by the State as well, such as state SRFs, and small community infrastructure. There is a lot of Venn diagramming going on, and I think a lot of local folks especially at the town level, it is really hard for them to navigate what funding can pay for what. So, the networks we have within our States, to be able to identify appropriate funding mechanisms, is a great source of information in being able to decide to go through the appropriate type of funding for the right kind of project.

John D'Antonio: Yes, the federal government puts things in place often and doesn't do enough outreach. The Corps is holding a lot of stakeholder meetings. The locals know their projects best. Perhaps at the conference in February, we can talk about different funding sources, ways to expand programs and plan outreach meetings. One key item on the success of EPA standing up the WIFIA program was the American Water Works Association did the heavy lifting for EPA to get the legislation through. I've been talking with the Corps about how we might be able to get an entity such as the WSWC to help with legislative changes that might be made to allow for a broader spectrum of WIFIA projects to be approved. I would like to make sure there is the ability to extend the authorities that the Corps has. Your point is well taken.

WSWC WATER INFRASTRUCTURE SYMPOSIUM - 2019

Tom Byler noted that a list of potential topics for the 2019 water infrastructure symposium is found under Tab H in the briefing materials. Tom remarked that when he agreed to Chair the WSWC Water Resources Committee, Tony asked him what his topic or focus or interest for the Committee might be. Tom mentioned infrastructure as a key interest for Oregon. Oregon is in its infancy in terms of being able to make significant investments in water-related infrastructure and the need is great. In the last few years, watching California roll out billions of dollars for infrastructure, I'm feeling a bit jealous and struggling to figure out how we make things function better and scale up in Oregon. That has led to the idea of holding a symposium in February. Please provide feedback on what agenda items you would like to see included for next February's symposium. Tab H has a list of potential topics. From Oregon's vantage point, ideas on generating state resources would be of interest. We would like to hear from other states how to come up with creative ideas to generate state resources, and how to help bring that important match to the table.

Tony mentioned that the WSWC has held two symposia on infrastructure issues in the past. We are looking for the members' level of interest before moving forward. There is interest at the federal level as well in ways to address these challenges. Texas may host the meeting.

Comments

Jeanine Jones: California has been very active in seeking new bonds. The California Water Commission, which is an independent board within DWR approved money for new storage projects, both surface and groundwater, at around \$2.5B for the public benefit. The money was not for the storage component for water agencies, it was for the component for fish and wildlife, recreation, etc. Last month, California voters passed a \$4B bond, which was a parks and water bond. \$1.6 B is for water. In the upcoming election, they will hold a vote on Proposition 3, which is an \$8.9B water bond and it is polling very well right now.

Brenda Bateman: I wanted to note that AWRA has a specialty conference on infrastructure planned for June 16-19, 2019 in Sparks, Nevada. If you wish to postpone your event a little, we may want to partner on that event.

Eric Millis: The State of Utah had a couple of processes going on to investigate how the State can participate in early water development. We have some processes in place to fund smaller water settlement projects. We're looking at the economic value and the economic costs of water development, as well as what agricultural water conversion and water conservation could do to delay or hold off the need for water development projects. We'd like to know how the State of Utah can become more efficient in its water use and therefore make this process of development and use of water more efficient.

Tom sought volunteers to help frame the agenda. Volunteers included: Tom Byler, Jon Niermann, Eric Millis, Becky Mitchell, and Kathleen Ligon.

WASHINGTON STREAMS RESTORATION ACT/WATER PROJECTS

Mike Gallagher noted that after just hearing about larger infrastructure projects, he was going to be drilling down smaller and discussing permit exempt wells – those wells that are individually owned on rural property that are exempt from a water right. In Washington State, there are four exemptions for a permit exempt well: (1) 5,000 gal/day domestic; (2) one-half acre of non-commercial lawn and garden; (3) stock water unlimited amount; and (4) industrial 5,000 gal/day. The use of water in Washington from permit exempt wells was severely tested.

The Water Resources Program is part of a much larger environmental protection agency known as the Department of Ecology. The mission statement of our program is that we manage water resources to meet the needs of people in partnership with our State's communities with water for people, farms, and fish.

In talking about permit exempt wells, a Supreme Court decision was issued in October 2016 known as *Whatcom County v. Hirst, et al.* Hirst and a group of individuals sued Whatcom County over what is known as the Growth Management Plan, arguing that at the county level (which is authorized under a separate law called the Growth Management Path), it failed to meet protection requirements for instream flows in Whatcom County for rural homes into the future. A law was adopted by the State legislature to overcome this court case and put into statute a way to address it.

Washington has 62 (or 63 if you include the mainstem of the Columbia River) watersheds. The Hirst case stems from the Nooksack watershed, which is Watershed 1, and the most impacted watersheds from this court decision are scattered throughout the state, largely in the Puget Sound basin and in eastern and north-central Washington.

A history of three other Washington State Supreme Court decisions led up to this case. The four Supreme Court decisions – *Postema*, *Swinomish*, *Foster* and *Hirst* – were all issued in the month of October and all by a 6-3 vote. The ground was likely set in 2000 with the *Postema* decision, which basically said that Ecology cannot authorize impairment of even a de minimus amount to streamflow, particularly if that streamflow is protected by an already adopted instream flow resolution. In 2013 in the *Swinomish* decision, which took effect in Watersheds 3 and 4, based on a reservation that was set aside for permit exempt wells, the court said Ecology cannot reallocate water instream for out-of-stream use (reinforcing the standard that no de minimus impairment is allowed). More recently, Ecology authorized a water right to a city with a lot of water for water mitigation, and in the *Foster* decision, the Supreme Court said that water for water impaired a certificated and permitted right to the streamflow and other senior water rights by allowing even a small amount to be sacrificed. Then in *Whatcom County v. Hirst*, the Court ruled that the plan failed to sufficiently protect water resources under the Growth Management Act. Counties have an independent responsibility to ensure that new permit-exempt uses do not impair senior uses, including instream flows. Washington is not a domestic preference state like most of the other states in the West. You can drill a well and it gives you physical access to the water, but it does not necessarily give you legal access. That is what the court ruled on.

This created a lot of political heat in the state legislature. The 2017 Legislature had about 20 different bills with different perspectives on how to “fix” this situation. In January 2018, the Legislature focused on the overall goal to improve streamflows and agreed to a \$300M authorization in bond revenue over 15 years to help pay for infrastructure improvements and ways to restore/improve streamflow, as well as to allow new wells to go in.

This new law allows that people can build homes using a permit-exempt well, however, they must pay a \$500 fee for each home. There are some water use restrictions. It does not affect regular water right processing or commercial buildings on an exempt well. This is for domestic use. This law established a pilot program for metering domestic uses in two basins, the Dungeness and Kittitas.

We have had to employ new staff. We are hiring about 12-15 new staff. We have to define the ecological benefit. This is a new challenge for our program. This is another example of how a state with a wide variety of participation, with 62 watersheds, complex geology and hydrogeology, and a myriad of court cases and statutes all try to fit together to try to manage sustainable use of water resources in the State of Washington.

The March 2018 article in *The Water Report* is a good recap of the *Hirst* case. Some possible solutions include buying senior water rights in that basin, or creating a water bank, increasing streamgage monitoring and floodplain restoration, as well as in-channel and off-channel storage, and fill the reservoirs in the wintertime and drain them in the summer to help improve streamflow (which may involve land acquisition and dam safety regulations), among other things. These are the types of solutions we are looking for to improve streamflow.

Questions

Tom Byler: Oregon is a bucket for bucket state and it is extremely hard for us, in some cases, to find mitigation. Previous to *Foster* you exercised some flexibility, and I'm curious about how you are dealing with past decisions, such as those you've held harmless?

Mike Gallagher: Yes, those are being held harmless. In *Foster*, the permit was appealed. The city owned the water rights. There is some in-kind and out-of-kind mitigation of water rights.

WATER-USE DATA AND RESEARCH (WUDR) PROGRAM

Mindi Dalton, Acting Program Coordinator for the USGS Water Availability and Use Science Program addressed the Committee. She discussed four programs with funds authorized and appropriated by Congress. These include: (1) the Groundwater and Streamflow Information Program (GWSIP); (2) the National Water Quality Program (NWQP); (3) the Water Resources Research Act Program (WRRA); and (4) the Water Availability and Use Science Program (WAUSP).

As part of the SECURE Water Act, Section 9508, Congress said USGS should be doing more to get a better understanding of water use by hydrologic unit code (HUC) and water use by aquifer. They should be doing water availability assessments and those assessments should include understanding the amount of water that is available for both human and ecological uses. The Act provided the USGS the authority for their Water Availability and Use Science Program (WAUSP) grants, and it directed them to update the brackish groundwater assessment that was done in the 1960s.

Five goals were identified for the National Water Census, which is the umbrella project housing all the work under the SECURE Water Act: (1) Assessing the status of the water resources of the Nation; (2) Determining the quantity of water that is available for beneficial uses; (3) Identifying long-term trends in water availability; (4) providing a more accurate

assessment of the change in the availability of water in the Nation; and (4) developing the basis for an improved ability to forecast the availability of water for future economic, energy production, and environmental uses.

This started in January 2018. Mindi has looked in detail at the Water Use program. USGS has been working with the States on water use data since the 1950s and produces a five-year compilation. USGS has received annual water use data at the county level and it is put into a national compilation and published every five years. People need better and more water use data.

Mindi will focus on five water use future directions: (1) estimation techniques and model development; (2) water use data services; (3) an interbasin transfer database; (4) conveyance losses; and (5) reservoir storage.

Regarding water use estimation, earlier this spring USGS held a workshop in Boise and looked at the feasibility of estimation techniques for water use. The focus is on three categories of use: irrigation, thermoelectric, and public supply. Those three categories alone make up 90% of use nationally. USGS included a performance measure, and told OMB the plan is to have baseline efforts completed by 2022. In following years, they will refine the methods. More data is needed to validate the models more frequently. USGS has several ways they can work with states through the Water-Use Data and Research (WUDR) program. The program has \$2M in cooperative matching funds that Congress has directed be put toward water use research. The cooperative matching funds are those funds that the local USGS Water Science Centers can use to cooperate on projects with state and local agencies.

A group of USGS scientists held a meeting last month to start forward on irrigation withdrawal and consumptive use models. They developed a process model for evapotranspiration (ET) data for irrigation withdrawals and consumptive use. They will get the model data down to a daily time step, and then will work backwards from that using information about irrigation efficiencies, crop type, etc. to calculate the amount of water that has to be withdrawn to reach that ET number. Of course, in order to get there, you need some data from metered wells to validate this model.

In an effort to get more data much more frequently, USGS has been working with Sara Larsen on the Water Data Exchange (WaDE). Mindi has talked with some internal partners within the National Groundwater Monitoring Network (NGWMN) to find ways to align the Water Use Grants program and their grants program to support data services. Instead of every five years, local USGS water use specialists would be coming to state folks looking to get data, they would be able to get that data through WaDE as it is put into your databases, essentially automating data sharing and USGS access. This will provide USGS the ability to get the data to validate the models much more frequently.

Mindi mentioned the integrated assessments as part of the SECURE Water Act. Congress said USGS should be doing assessments of water availability now and in the future for

both human and ecological uses. As part of the National Water Census, we have a lot of distinct projects ongoing. They have focus area studies that are stakeholder driven, studies in the basin of conflict, groundwater availability studies; eco-flows, drought, and so forth. Water quality is also part of this, and although that is not part of Mindi's program, she collaborates with the program coordinator.

USGS is calling this an integrated water availability assessment. Rather than having distinctive components of assessments, they will have one cohesive project and will develop national scale indicators, and develop and apply predictive tools, to integrate assessments.

Eco-flows is a nationally consistent network of low-cost methods for estimating streamflow in small streams to quantify the precision and accuracy of alternative streamflow procedures.

It is Mindi's belief that the water mission area should be providing their counterparts in the ecosystems mission area with the hydrologic information they need to do their assessments. They've found that many times, they are going out to do their assessments and collecting hydrologic information, but they don't have the tools or the training necessary to collect the information accurately. They are working to set up eco and hydrological research and monitoring networks where essentially the hydrologists and technicians are walking the streams with the ecologists and helping to develop a network of monitoring techniques, tools, and equipment in order to perform the analyses.

This unified approach will establish a core set of analyses, tools and data sets to evaluate water availability for human and ecological use and support infrastructure, water security, and economic optimization. These assessments are basin specific and stakeholder driven. They anticipate development of a framework for how to perform the assessments, and will then work with their partners to develop the projects around those issues so they are done in a nationally consistent way.

Mindi would like some feedback from WSWC members on their needs – with regard to plans for water use estimation and integrated assessments. What kind of data are you looking for? What kind of data do you need? What kind of databases would be helpful? What sorts of tools do you need? And how can these tools and information be delivered?

Questions

Mary Verner: Thank you for your presentation. Are you trying to tackle all 50 states simultaneously?

Mindi Dalton: If you're talking about water use estimation, then yes. Our goal is for water use estimation is that by 2022 we will be able to estimate public supply and irrigation at the HUC 12 level on a daily basis.

Mary Verner: How can states work with you early on with respect to databases to see if we can make them compatible?

Mindi Dalton: I sent out an email this morning to see if we can convene a meeting to talk about how to align all of the different activities. The National Groundwater Monitoring Network has already moved out on getting databases set up. If we can set up our program announcements through WUDR to do the same thing, I'm all for it. If we can set up our program announcements through WUDR to support states in getting their water use data into WaDE, I'm all for it. The most important thing is to get data into databases and access to those databases so that we don't have to share things on paper and via email any longer.

Sara Larsen: I would add to that. We have been working with the USGS' Office of Water Information to take the standard for transferring hydrologic information, Water Marked-Up Language (Water ML). The National Groundwater Monitoring Network has adapted that to create a standard for groundwater and well information called Groundwater ML. I would like to propose for ourselves and for USGS an equivalent Water Use ML and then make it so that our databases can stream that directly. The information would then show up in WaDE and in the NGWMN portal.

David Schade: As Alaska is building our data and upgrading, the hydrologists were looking at monthly data, and I wanted daily data. More detail is better.

Christopher Estes: I'm curious how the priorities of the ad hoc water census groups fit into your thinking and have you already integrated those?

Mindi Dalton: No, they have not yet been integrated. As a matter of fact, that is one of the conversations that we have been having. How do you convene that ad hoc advisory committee and get more feedback?

Kevin Frederick: Will the study accommodate some sort of accounting for produced water on the assessment of availability?

Mindi Dalton: Yes. Sure, they absolutely can. It would be a basin-by-basin issue.

Jan Langel: We have funding shortfalls for cost shares on streamgages. We also have a need for much more data, particularly in the eastern part of Montana where there are not many SNOTEL sites or soil moisture monitoring stations. I'd like your thoughts on if there are possibilities for increased funding for streamgaging sites? And maybe even funding for additional sites so we can get the data we need?

Mindi Dalton: We are seeing support Congressionally for the streamgaging program. I cannot speak to it directly as it is not my program. I know the ICWP and WSWC have been very helpful in this regard. We have seen a lot of support for an initiative called the NexGen

Observing System. We got \$1.5M in 2018 to pilot this system in the Delaware River Basin. It is an intensive network of hydrologic observations.

Thank you.

WATER DATA EXCHANGE (WaDE) UPDATE

Sara Larsen thanked Oregon for hosting the meeting. She provided a WaDE program status update. Right now most all of the member states are now flowing at least one primary dataset, and in some cases, several. We are working with Alaska and have built a prototype for their water rights information and water use information as well. This is being reviewed and will hopefully come online very quickly.

Over the past month, we have been working with Montana on their water rights information, and some of their sensor-based observation data as well, to determine how they might go about publishing it. An arrangement has been made for Sara to learn from them on their sensor-based information, and they will also be setting up a node for WaDE.

North Dakota has a working pilot. They are facing a tough challenge in that they are centralizing information technology (IT) services, and they are a strictly “open source” shop. They might be adapting their shop to some new technologies. They are hoping to get their WaDE information online either before they go through the centralization process, or perhaps set it up on the WSWC server, while they get through the process.

We have been gathering feedback from a variety of sources on an update to the data that is being streamed via WaDE through a GitHub repository. We will be making changes based on the comments received, and hope to have this completed by October.

We have been working with USGS on the water use information to update WaDE performance and tracking capabilities. We are evaluating platforms for monitoring our usage to ensure the usage is secure and robust, and to take advantage of USGS application developers’ expertise.

Sara will be reaching out to each of the states and going state-by-state to update the WaDE components. This process is somewhat difficult. It will require some reconfiguration with the IT teams, and especially as we move some of our information.

Over the past six months, WSWC has done a lot of outreach with the USGS Water Availability and Use Program, through the auspices of the Water-Use Data and Research (WUDR) program assistance, on data and web services delivery mechanisms. WSWC provided comments on a data transfer guidance document to make sure that WUDR is delivering their information consistent with WaDE. We also worked with the USGS Streamflow Collaborative Workgroup to give feedback to USGS on the National Ground Water Monitoring portal and the

Streamflow Information Program. It has a national basis, thus we've been working with Wisconsin and New Jersey and some other eastern USGS folks to determine how WaDE might work for eastern states.

We have worked with the Aspen Institute on a dialogue series for open water data and expanding on that concept and the principles involved. Through those conversations, we have received some funding. The group is interested in convening an organization that is dedicated to advocating for more open water data and more interoperable datasets. They are calling this group the "Internet of Water," realizing that sensors and this information is becoming really big and scattered, and trying to make sense of all of the different groups. They would like to quantify documents and communicate the value of open, shared, integrated water data to build the case for investing and making water data open and shareable. The goal is to integrate existing water data and connect regional data sharing communities. They espouse the same principles the WSWC has been talking about for the last couple of years. These ideas are having an impact more widely. Hopefully, the Aspen group will have an impact in connecting people with WaDE and the Consortium of Universities for the Advancement of Hydrologic Science Inc. (CUAHSI) and other data sharing hubs, so we can develop standards and make things much easier to use and more interoperable.

Sara has also been working with the California AB1755 Open Water Information Architecture (OWIA) group. They operate under a similar set of principles. WaDE has informed some of their architecture decisions, and vice versa. Thus, this has been a good collaborative effort.

WSWC held a Water Information Management Systems (WIMS) workshop in January that was cohosted by the NASA Jet Propulsion Laboratory. We investigated the use of cloud computing within states. We are working on a report that summarizes the survey information. Much of that deals with how states have been impacted by centralized IT services.

With respect to funding and resources, we have funding through 2019 from the EPA Exchange Network grant. We have really valuable in-kind support from USGS through the Office of Water Information staff. We have funding to disperse to our member states to share water use information through the WUDR program. We have support from NASA for specialized topics such as cloud computing and WIMS workshops. More recently, we made connections with a group known as the Water Foundation, which is a consortium of philanthropic organizations that has really taken an interest in WaDE. They have offered to support our efforts in revamping the components of WaDE and to help the states with updates. There is funding to hire a full-time employee as a technical developer for the WaDE program. We continue to seek funding support for the sensor-based observations information. We applied for an Exchange Network grant this past January, but unfortunately did not receive it.

Sara reviewed the cloud survey briefly. All of the member states contributed to the survey. The executive summary of the report is included under Tab J of the briefing materials. It summarizes the WIMS break-out sessions on cloud-based topics and how to transition NASA

tools into state agency operations. This is a significant hurdle for the NASA team, and investigations continue. The appendix contains state policies surrounding cloud computing. Only a small percentage of our member states are actually using the cloud at this time. All of the respondents to the survey believe that their cloud usage will increase in the future.

Based on the positive response to the WIMS workshop, we are considering holding a workshop again next year. If there is a topic you would particularly like to have addressed at a WIMS workshop, please let Sara know. A Water Information Data Subcommittee (WIDS) will be convened shortly to go over preliminary topics.

PRIVATELY DEVELOPED GROUND WATER RECHARGE

Dave Tuthill represents Recharge Development Corporation, and was a former Council member from Idaho. He came as a water user and looking for opportunities to offer a tool for privately managed aquifer recharge that works for some areas.

Dave used a powerpoint presentation that is available on the WSWC website. Many states have done or are doing managed aquifer recharge where water is intentionally put into the aquifer. Recharge Development Corporation is looking at a system where this can be done privately and be self-sustaining.

Why would you do this? In a standard case, if you have a well, normally the person with the well gets a certain amount of the public resource to pump. As long as that resource is there under a water right, then that water resource can be used. Sometimes the water resource is no longer available or won't be available (or is somehow precluded).

If a person has private managed aquifer recharge, the idea is to use that water as storage. The water comes in, and it is managed by aquifer recharge units (ARUs). The water comes in so the well can operate. The well can operate much like the surface system that has storage. In Idaho and in many states, there is a natural flow water right for the surface system. When the natural flow is curtailed, then storage is relied on. The idea is to do the same thing with groundwater.

Recharge Development Corporation's mission is to establish self-perpetuating private managed aquifer recharge in basins throughout the world. A system has been developed that is applicable in all western states and in basins across the world. The Corporation is comprised of eight people. There are four water resource people like Dave, two water users, and two attorneys. We've been struggling with this issue for eight years. Having worked previously with the state, many realized a solution was needed other than mitigating through the purchase of storage water or curtailment. The storage water will run out eventually. Operating under conjunctive administration in many of the states, they must put senior water users first, whether ground water or surface water. The state needs to look at the connection between ground water and surface water. As that is done, the groundwater users often times come up short. As we

looked at how to categorize and put a handle on the water in the aquifer, Phil Rassier suggested this be called an aquifer recharge unit (ARU). This is storage space in the aquifer. There is no water in it. An ARU represents an acre-foot of space in the aquifer equivalent to one acre-foot of space in a surface reservoir.

Does the process work? And is it legal? How it works is that we have a managed aquifer recharge event and we measure the water. Again, it is storage space in the aquifer. First, they must obtain a water right under state law. Oftentimes it is a junior water right. That water right is used in times of plenty. The water is managed, put into the ground and measured, and then filled the ARUs are identified. This is tracked through a sophisticated cloud-based water right reporting system that has been developed by Recharge Development Corporation (RDC). When a certain well needs recharged water, they track it. RDC has invented a process to manage the whole thing. A patent is pending for this system.

RDC teamed up with Teton Technology Water Resource Management from Idaho Falls to track flow on a daily basis using a cloud-based system. For many, the dream is to have real-time data. That is what we get through this system. The tracking system is inexpensive. We have a system for tracking where the water is and ARUs, as compared with the natural flow. RDC has collaborated with two groundwater districts in eastern Idaho and developed the software.

We recognize that one must have a water right for putting the water in and for taking it out. We track it, model it, and measure it. We've looked at the legal requirements. We proposed a series of papers with The Water Report, David Moon's publication. There is a nice cover story recently published on the Eastern Snake Plain Aquifer, and it describes the public recharge. RDC believes their system is within legal parameters. They sold \$500,000 worth of ARUs to a local groundwater district earlier this year. They hired a water attorney who pushed back hard on all of our concepts. The result has been that is has been okay.

If the wells in a groundwater basin are now being regulated, or are facing regulation, and if there is a source of water that is available, and if there is an aquifer that will receive the water, then this basin might be eligible for this kind of approach. Where are some of these basins? RDC is already running this approach in the Eastern Snake Plain, and there are a couple of other basins in Idaho that are in need of this kind of approach. Basins have been identified in Oregon and Washington as well.

This approach is being taken right now. RDC has several recharge areas in which they are operating. They have created a local non-profit corporation known as Eastern Snake Plain Aquifer Recharge. RDC hopes to pass this on to local control, although it is privately funded. RDC is looking for private funding.

Questions

Garland Erbele: I understand the concept of selling an aquifer recharge storage unit. How do you account for losses of what you recharge and how do you manage that?

Dave Tuthill: You have to model it. You have to use a model that is either already built, or build one. It is managed through modeling.

Pat Tyrrell: The water that is used to fill your aquifer recharge units comes from somewhere. What is the source of that water and how do you acquire it? How do you differentiate between that water and water that is in the public aquifer recharge program or otherwise? I'm trying to figure out how you get the water to put into your space to then resell.

Dave Tuthill: That is a 2017 priority water right. On average, a lot of water runs down the stream. We file an application for a permit for a new water right with a brand new priority. When it's on it's on. As far as differentiating that, we do that through the model. We are only modeling what happens to the water we put in and take out.

Kevin Frederick: Are there any water quality permits required? If so, what are the challenges for the permitting process for your approach?

Dave Tuthill: Yes. The Idaho Department of Environmental Quality does have a permitting process for basins. If you are recharging in an existing canal, for example, putting water in much earlier, there is no problem with that. If you are recharging to a new site, you have to get a permit from the DEQ.

WSWC/CDWR S2S PRECIPITATION FORECASTING WORKSHOP REPORT

Jeanine Jones reported on a workshop held in May 2018 on subseasonal to seasonal (S2S) precipitation forecasting. What is S2S? It is beyond the time scale of weather models out more than two weeks, and as defined by the federal legislation passed last year, is out to two years. We are interested in these forecasts since NOAA's existing operational outlooks don't have much skill.

The white areas depicted on the map (see presentation at [J.Jones' presentation](#)) are where the skill is no better than average climatology. Water managers care a lot about lead time. If water managers had more lead time, then they could make operational decisions for reservoirs and other infrastructure. Unfortunately, the science is not there yet. We are interested in encouraging our federal partners at NOAA to put forth some effort and to develop more skill in this area.

Thus, WSWC and California's Department of Water Resources (CDWR) have held an annual workshop on this subject in San Diego. Dave DeWitt, who heads NOAA's Climate

Prediction Center attended. Since CDWR has been pushing this effort, they have been doing a lot across the state. CDWR is about to wrap up a contract with NOAA through the Climate Prediction Center and the Office of Atmospheric Research for efforts over a five year period to improve the near term forecasting for weeks zero to four. This goes a little beyond the current weather models. This will help forecasts for states immediately adjacent to California as well. CDWR also has contracts with their research partners at JPL and Scripps on experimental forecasts of atmospheric rivers. They are now beginning to work on experimental forecasts of blocking events. CDWR also has an exploratory contract with the Colorado River Basin to pull together some existing research and information to get a proposal in front of the academic community so they can request funding.

At our May workshop, we heard about some interesting new work coming out of the research arm of NOAA, the Geophysical Fluid Dynamics Laboratory (GFDL), regarding the ability to forecast seasonal snowpack in the western mountains. There is some very interesting research going on. CDWR would like to find out how to help them accelerate the transition from research to operations.

Workshop attendees also heard about the Bureau of Reclamation's forecast rodeo. This is a prize contest for voluntary problem solvers to determine if they can do skillful temperature and precipitation forecasts across the West. The judging is currently ongoing and prizes will be awarded in the fall.

Furthermore, there were presentations about work in California on forecast-informed reservoir operations and pilot projects. One of these projects is designed to improve reservoir operations to enable more groundwater recharge downstream. CDWR has a new initiative to try to increase capacity beyond the existing recharge projects in the state.

Jeanine expressed appreciation to Roger for the help he has provided during his time as the WestFAST liaison. It has been useful to have someone who knows how NOAA works internally to help bring the NOAA partners to the table. Some WSWC members have heard from Jeanine with respect to sending comment letters on NOAA's report to Congress, which is required pursuant to the Weather Research Act of 2017. She expressed appreciation for the letters that will be written. It will be important for NOAA to hear from the water management community, more largely, so they are not just hearing from emergency managers, which is the constituency they often work with.

Technically speaking, for one day, NOAA released a draft report to Congress and then found out from their administrative folks they were not supposed to do it that way, so they pulled the report back. Some of us managed to get a copy of the draft report. Instead they have put out for public comment a draft outline of the report, which does not really have a lot of content. We know the key points we want them to hear in comments. One of those is that we would like NOAA's effort into this to be similar to what they have done on the East Coast for hurricane forecasts. We are encouraging this kind of focused effort for S2S precipitation forecasting. One section in the draft report, which we theoretically don't have, expresses support for observing

systems that are needed, including NOAA's coop river program. Weather and climate modeling chews up super computer resources. We hear over and over again from NOAA that they need support expressed for those kinds of computing resources to be able to do the research.

Letters will be written to NOAA to encourage more S2S forecasting, and Jeanine is seeking comments on the NOAA report outline. The deadline for comments is August 10, 2018.

Jeanine further noted that NOAA has also posted an announcement on a user needs survey. Through this, NOAA is asking folks to submit their needs for S2S forecasts. A user needs query form was passed out to attendees. There is currently no deadline for returning the survey forms.

INSTREAM FLOW COUNCIL FLOW 2018 REPORT

Christopher Estes, Director at Large, Instream Flow Council and Aquatic Resources and Habitat Scientist, Chalk Board Enterprises, LLC reported on the *FLOW 2018* conference held at the Hilton Hotel in Fort Collins, Colorado on April 24 to 26, 2018. It represented the 4th international instream flow and water level conference hosted by the Instream Flow Council (IFC) and coincided with its 20th anniversary. Approximately 200 water stakeholders participated.

FLOW 2018 focused on problem solving and proven practices used from around the globe to mitigate negative impacts of drought on instream flow regimes and water levels required to sustain fish, wildlife, and habitat. Four, half-day sessions in plenary format featured selected speakers who focused sharply on outcome-based elements that have been shown to work for dealing with drought-induced challenges to water management including: 1) legal strategies; (2) institutional capacity (effective agency and administrative actions); (3) scientific principles spanning hydrology, biology, geomorphology, connectivity, and water quality; and (4) incorporating public involvement.

Facilitated discussions were held with presenters and attendees after each plenary session to explore and capture additional insights, strategies, and tools.

As with previous IFC conferences, the workshop format and emphasis on interdisciplinary problem-solving created networking opportunities designed to further benefit the effectiveness of participants to mitigate drought and other types of hydro-illogic cycles challenges long after the end of the workshop.

Similar to *FLOW 2015* <https://www.instreamflowcouncil.org/conferences-flow-2015-workshop-materials/>, *FLOW 2018* workshop products are slated to be available for download from the IFC web site <https://www.instreamflowcouncil.org/> no later than September 2018.

The IFC seeks to help state, provincial, and territorial fish and wildlife agencies better fulfill their public trust responsibility to protect aquatic resources, so that they can be used and enjoyed by current and future generations.

Thanks to Tony Willardson, Mindi Dalton, Sue Lowry, Roger Gorke, and others in attendance at the WSWC meeting, including members and staff not present, that contributed to the success of *FLOW 2018*.

Questions

Question: When will the next meeting be held?

Christopher Estes: It is not yet scheduled. It is typically held about every two to three years. We encourage all water stakeholders, no matter what type of water use outcome they desire, to participate and ensure that these meetings are successful. We are open to ideas you'd like to see addressed.

SUNSETTING POSITIONS

At the Fall meetings, there will be several positions taken up by this committee. These positions are included under Tab XYZ of the briefing materials.

OTHER MATTERS

Tracy Streeter asked if there was anyone following the contents of the House version of the Farm Bill relative to drought provisions and conservation funding. In a Senate amendment, a group that supports a lot of Colorado River irrigation district interests included some drought provisions. It has to do with EQIP funding and providing an opportunity for groundwater districts, irrigation districts and states to play a greater role in administering the EQIP program and certain drought-related projects. He stated he is not really familiar with this amendment as it is not a big deal for the State of Kansas.

At a previous WSWC meeting, Jeanine Jones and I discussed the use of the Conservation Reserve Enhancement Program (CREP) for water rights retirement. This program has been used in Nebraska, Colorado, and Kansas to retire water. We wanted to make improvements to the program by allowing landowners to dry their farm, converting their irrigated land to dry land. There has always been a hang up with using CRP to retire water rights because no one wants to take land out of production and put it into permanent vegetation. Now there is a permit that will allow that in the Senate version of the bill. The conference committees are getting ready to resolve the differences between the two chambers. Tracy is working with a number of states to get support letters for the draft provisions. If you are interested, please contact Tracy.

Jeanine Jones commented that she appreciates Tracy's efforts. For many states, the agricultural interests have felt the Farm Bill is their exclusive turf. They don't want to share too much with water agencies. There is a lot of opportunity in the Farm Bill. At our next meeting, we should likely have more discussion on the Farm Bill.

There being no other matters, the meeting was adjourned.