

Advisory Committee on Water Information

Annual Meeting - October 27, 2015

Tuesday, October 27

Welcome and opening remarks – William Werkheiser, USGS Associate Director for Water, ACWI Alternate Chair

Bill Werkheiser welcomed participants to the ACWI meeting and thanked everyone for their continued support and participation on ACWI. Bill gave a brief overview of the agenda noting that ACWI's subcommittees will be reporting. He commented that ACWI has had discussions on how to bring the abundance of available data and information together in a more cohesive manner.

Bill spoke to the reorganization and budget structure change of the Water Mission Area (WMA) and passed out a handout to those in attendance to clarify those changes. He explained that the WMA structure is a complex mix. We have tried to consolidate our activities into three major programs and the Water Resources Research Initiative (WRRRI).

Question (Judy Beck) – What effect will the budget restructure change have on USGS partnerships?

Response (Bill Werkheiser) – The hope is that they will be strengthened, but they won't be changed. Regarding Feds, we are hoping to clarify the lines with which we work with our partners.

Report from the Subcommittee on Hydrology – Robert Mason, USGS

Robert Mason briefed ACWI on the activities of the Subcommittee on Hydrology (SOH). Robert is now the Chair of the SOH. The group focuses on streamflow and quantity and meets quarterly. The workgroups of the SOH provide the foundation for the work of the SOH. The Tennessee Valley Authority (TVA) is now a full member – they presented on their work on probabilistic flood design. Robert noted that the TVA is recovering from a period of strife within their agency.

Workgroup updates:

- *STIWG* –
 - Concerned with how we deliver information.
 - Works closely with NESDIS and GOES.
 - Congress has directed the President to use the same frequency that we use, but this will cause problems. Developed a white paper about this issue that pushes for preservation of DCS.
 - There is concern about losing direct communications.
 - The committee was re-chartered with the OCM group.

- *HMWG* – Jerry Webb, Chair, Claudia Hoeft, Co-Chair
 - Co-sponsored the 15th SED-HYD conference
 - Committee activities involve Federal interactions and exchange of models.
 - Meet every 3 years, but this may move to every 5 years.

- *ESEWG* –
 - This is the newest of the SOH workgroups.
 - The information we need for using rainfall duration data has fallen away; methodologies have not kept pace with current GIS. The group was charged with coming up with plans on how to do this.
 - Also working on updating PMP techniques.
 - The group has held several meetings – large turnout at a workshop in January 2013, May 2014 workshop and follow-up, May 2015 meeting on uncertainty analysis for PMP **(See slides)**.
 - The ESEWG is working to develop a database for coverages of precipitation that everyone can use to access that information. We need ways to share information, thus, the basis behind development of the database.

- *Hydrologic Frequency Analysis Work Group (HFAWG)* – Will Thomas gave a brief history of the HFAWG and updated ACWI on the group’s activities since the last ACWI meeting.
 - Will noted that the workgroup has been around for 15 years. The group’s charge was to improve guidelines for flood frequency analysis (Bulletin 17B). During these years, the focus has been very flood oriented.
 - The group’s task is to draft papers and recommendations for the ACWI.
 - Bulletin 17B is being updated with new information pertinent since 1982. This update will be published as a USGS Techniques and Methods publication - Guidelines for Determining Flood Flow Frequency Bulletin 17C. Much of the information is based on work by Tim Cohen.
 - We now have a robust way to estimate flood frequency, and USGS is applying that methodology.
 - Progress since last meeting –
 - Published as a USGS report.
 - April 2015 – Provided first complete draft of B17C to HFAWG members for review.
 - May 2015 – met in Alexandria, VA, discussed B17C and received comments from members.
 - June 2015 – revised version provided to SOH. July 2015 – spent time at meeting discussing and getting feedback from SOH members.
 - Will noted the importance of an updated report; noting the flooding that has occurred over the decade and recently.
 - Progress since August 14 meeting – USGS colleague review process – three independent technical reviews completed; very positive, no fatal flaws, some minor improvements recommended. The writing team is addressing the review comments. The next draft is anticipated by the end of October 2015. This version will be submitted for public comment through ACWI/SOH. It is considered “influential science.” Robert Mason has put together a communication plan to describe it. Significant impact on floodplain mapping in the U.S. A 45-day public comment period will be announced by WICP through the Federal Register – on the Web.
 - Path forward –
 - The writing team will respond to public comments, circulate to SOH and post on web site when approved. 17C will be revised as appropriate based on public comment.

- Obtain approval by ACWI before publication; software, examples, and training materials will be posted on the HFAWG website.
- Training course being planned for ASCE EWRI – May 27 - in 2016 in West Palm Beach, FL.
- Additional outreach through other technical conferences.

Proposal for Streamflow Information Collaborative Working Group –

The SOH would like to form a new Streamflow Information Collaboration Working Group. The group will:

- Coordinate national streamflow information network priorities and needs.
- Identify areas for coordination, innovation, technical transfer, training, and leveraging of resources.
- Create cohesive messaging about the value, uses, economic benefits, and critical gaps in our Nation’s streamflow information network.
- Increase information available to engage the community.

A Draft Terms of Reference (TOR) is in ACWI folders for review.

Other Business -- Robert requested approval to present at ASFPM. This was recently approved.

Questions:

Musick – I am kind of disappointed that you didn’t include groundwater in this effort. Are there any plans to bring this effort to a more holistic view of water resources? **Mason:** Yes, but right now we felt it was most important to focus on surface water.

Goldstein – Does 17C take non-stationary climate into account? **Answer:** Methods for dealing with non-stationary climate aren’t well accepted yet, so we don’t include any in the current draft of 17C, but the document will tell people where they can go to get information that will help them deal with non-stationarity. Robert noted that this is an area that the group can build on later. There are a lot of things to be addressed in the future.

Judy Beck – League of Women Voters has a ton of meetings every year related to local storm water management, so this is a big issue for us. But 17C seems aimed at a technical audience; what about the general public? We need a translation document of some type, to help the non-technical audience understand the important issues. **Answer:** Bulletin 17C was always intended to be a technical report, but we do need to have a plan for explaining it to non-technical audiences. We could use the new groundwater/surface-water workgroup for publicizing the release of 17C and putting together a non-technical companion report that could be issued along with 17C, to make the issues clear for non-scientists.

Lowry – Regarding establishment of the new workgroup... the getting the word out piece is different from how we're going to be a clearinghouse. Do you envision this effort going beyond? Is there a problem of Federal participation? **Mason** – The document shared with the group is bare bones. There may be two documents – one more technical and the other to explain the value of streamflow information. **Lowry** – How about a Federal piece? **Mason** – Feds can't lobby, but we can help show how the data is used. **Lowry** – For those who can advocate, can you put something together? **Werkheiser** – The intent is to be an advisory group. The idea is to get the ideas to Pixie Hamilton so she can use these when she reports to Congress. **Mason** – We anticipate there are others who are supportive of the effort. We would like to see them participate. **Bill Werkheiser** added that he does not see this as impeding other efforts. He sees it bringing in information.

Musick – Disappointed that groundwater is not included. Is there intent to bring this to a more holistic view of water resources? **Mason** – The program is for both, the SOGW does a great job articulating the GW issues. We felt that we needed something on the SW side to complement what the SOGW is doing.

Kernan – Need to keep the idea that open monitoring needs to be more streamlined – SW, GW, etc. At the last meeting, innovation was promoted. The idea was put in the parking lot to save for later. Survey needed to do a better job articulating what it's doing.

Carpenter – Is there a chance we might be able to get a notice sent through the ACWI listserv so it can be forwarded to colleagues? **Mason** – Yes.

McLaughlin – There may be people even in the tech realm who are not sure of the benefits of Bulletin 17C versus 17B. Focus on the uncertainty piece – confidence intervals, for example, and an explanation of why that matters and how people use confidence intervals. I think there is tremendous benefit to a lot of people. **Answer:** Yes, absolutely, that's a good idea. The real difference between 17B and 17C is that 17C fills in some data gaps that posed problems for users of 17B. We really will take to heart connecting the pieces and the idea of emphasizing information about the practical applications of 17C. **McLaughlin** added that this will make it easier to sell in an advocacy way; show how there is payoff in real world situations.

Bill Werkheiser added that he commends the SOH on its efforts and including it as influential science. There are specific terms to meet this requirement.

- Need to add a link back to the shrinking budget workgroup in the Terms of Reference (TOR) for the new SOH workgroup.
- If you have any other comments on the TOR document, send them to Wendy Norton.

Wendy Norton – To establish a formal working group, the SOH will approve the TOR document. Once they approve the TOR, the final version will go out to ACWI members for email vote to establish the group. It's a simple process.

Sue Lowry asked if the call for new membership will come from the SOH with Wendy responding yes. You do not have to be an ACWI member to serve on an ACWI subcommittee. Membership is open to anybody appropriate. **Susan Holdsworth** commented that it is valuable that the agency is trying to reach out to others outside of Feds.

Update from National Water Quality Monitoring Council – Susan Holdsworth, EPA; Gary Rowe, USGS

- Overview of products (website, webinars, newsletter, YouTube channel, etc)
 - Most recent webinar attendance >500
- Overview of goals
 - bring together diverse expertise
- Explanation of Council “wheel” framework (developed by Chuck Spooner and Gail Mallard)
 - Forming a cornerstone foundation for the Council, the graphic has “staying power” and is scalable from the national to local levels
- National Monitoring Conference – conference plans for Tampa, review of prior conference themes, explanation of volunteer monitoring participation, award nominations, etc.
 - See acwi.gov/monitoring/conference/ for more information
 - Attracts between 600 and 1200 participants depending on location and financial status of country
 - Intend to build a complex and diverse agenda.
 - Re-enforce connections from coastal waters to headwaters.
 - Susan noted the Council’s request for assistance in nominating candidates for awards. They would like to have a robust field of candidates to evaluate.
- National Network of Reference Watersheds – goals, walk-through of database, core watersheds, and next steps
 - A high priority for the group is to add more watersheds to the database. If you want to add watersheds to the database, contact Mike McHale, whose email address is on the website (mmchale@usgs.gov).
 - Encourage broader participation in the network and water quality data portal (more data in); look toward additional land use updates and other watershed attributes, migrate to Council website
 - **Goldstein:** What are the sizes of the watersheds? **Holdsworth:** I don’t remember and would need to look it up, but I think the stats are included in the materials on the website.
 - **Bill Wilber:** There was a point made earlier today about the need for integration of networks, and this reference watersheds network lends itself really well to the vision established by Luna Leopold, which was a model for the National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries.
- Water Quality Portal update – 260 million records available from 2.2 million monitoring sites; 1.4 billion automated web retrievals downloaded; 4,155 visits from 2,600 users
 - Sample application of portal web services: Gold King Mine spill query and resulting output from the portal
 - Next steps: the portal team is putting together a vision document that will guide the portal for the next 5 years. Big issues we’ll be working are system performance (very good currently and we want to keep it that way), data quantity and quality, data display, outreach.
- **Werkheiser:** Are there any plans to move the portal to the cloud? **Holdsworth and Rowe:** Yes, but we don’t have a specific timeframe in mind at this point. Migration to the cloud would be part of the 5-year plan, and we’re working with Nate Booth and USGS-OWI to figure out what’s the best technology to accommodate the future of the portal. We’re also looking at how the portal will handle continuous water quality data (probably doesn’t support it right now).

Round-table updates from members – Part 1

Kernan – ASDWA – Partner with other agencies on a Source Water. There is a lot of work occurring with harmful algal blooms (HABs). Work relative to controlling the sources of these water quality issues. Also, development of clean water/safe drinking water act toolkit. Extreme weather and climate impacts continues to be an area of focus. Work w/ EPA to update drinking water, cloud-based database (2017 completion).

Vicory – Stantec – ORSANCO has been all things HABs in response to outbreak. ORSANCO now has a standing water resources committee that is working to determine what the appropriate role is for ORSANCO with respect to interstate water resource issues. The Compact doesn't address this need because it's all about pollution. ORSANCO has never thought about water resources management in the Ohio River Valley because COE has done that; so ORSANCO is breaking new ground here. Another issue is "America's Watershed Initiative", which would put together a "report card" on the Mississippi Basin; they just released their summary of the report card (D+) a couple of weeks ago.

Barndt – GWPC – Just held annual meeting in Oklahoma City. Source water protection is a key issue for us. FracFocus is an initiative that allows hydraulic fracturing industry to publish the composition of the chemicals they're using; this reporting is now mandatory for those who want to conduct hydraulic fracturing on BLM lands. This database has been recently upgraded, to make it more query-able. Also involved in a risk-based management database system developed to service underground injection programs. There has been an effort in the last 2 years to expand the system for water programs. Groundwater Report to the Nation was released a few years ago. At our meetings, we've been discussing participation in two USGS initiatives: the NGWMN and the Water Availability and Use Program.

Carpenter – AWWA – We are a membership organization of 50,000 members. Issues include drinking water, wastewater, utilities, etc., mostly in North America. We are traditionally known as "the drinking water folks." We are working to develop a framework for direct potable re-use. We are a member of the Source Water Collaborative mentioned by Brandon Kernan. Cyanotoxins are very important to us. FEMA flood standards – how does this effort fit with the Bulletin 17C effort? We are interested in communicating with FEMA.

Beck – League of Women Voters – In addition to our concern about voting issues, we have a natural resources portfolio, and have been involved in water issues all over the Nation at the local level. Increasingly, the Leagues are joining together around watersheds. Giving a talk soon on watershed literacy. Some of the tools that we've talked about today will be useful for that purpose. We have launched a program/strategy to celebrate the LWV where we will try to hold 100 watershed meetings in the Lake Michigan area to recognize the League's 100th anniversary.

Zhang – AWRA – Our conference will be held in Denver this year. The conference will focus on issues related to oil & gas development and western water law, and there's a session on the OWDI. Trying to emphasize integrated water resources management – "applied" IWRM.

Freedman – WEF – We just had our annual conference in Chicago (26,000 attendees), and it was very successful. We had two congressional briefings in the last year, focusing on the importance of water data (pesticides, nutrients). We have just announced the start of a Stormwater Institute. Published *From*

Rainfall to Results. WEF is partnering with AMWA to look at water and climate issues, including info about data, info, tools. We're involved in at least 12 Great Lakes buoys that are looking at HABs, microcystis, etc.; many of these buoys have live cameras on them. Beach-cast allows you to look at beach conditions (temperatures, but also water conditions).

Heiskary – NALMS – Our 35th annual international symposium coming up November 17-20 in Saratoga Springs, NY. HABs are a big issue for us too, and I would like to share some information on this with you, so I will get a link to Wendy. NALMS is quite active in this area – published articles in journals and quarterly magazine.

Brown – ASFPM – Updating flood maps is crucial; many of these maps are out of date as soon as they're published. We're continuing to support Bulletin 17C and USGS streamgaging activities. We would really like to see some work to promote an analysis of what flooding really costs the Nation annually; about 90 percent of flood claims are for structures that are outside of floodplain areas. Trying to promote integration of water quality and water quantity science: get rid of the silos – water is water. In the Flood Insurance Program, we're supporting the movement toward actuarial rates rather than subsidized rates.

Mace – WSWC – We were created to get the western States together to discuss water issues, and members are generally governor appointees who get together several times a year to talk about broad policy issues. Very interested in waters of the U.S.; groundwater guidance out of Forest Service and hope to be in review with them on proposed rules that are coming out. Our WADE project (we put open-source data online so people can harvest it) has received lots of good support from USGS. Remote sensing and streamgaging are key interests for WSWC, and we work closely with ICWP. We are supportive of NOAA – data collection and predictions for future

Pathak – COE – We operate 700 dams located in 200 watersheds operated on a real-time basis during floods and droughts. We have started a management system (CWMS) - \$25 million program over several years. We have about 60 watersheds modeled currently and those watersheds can be modeled on a real-time basis. [Note – perhaps this can help with evaluating the costs of flooding nationally?] Also, we have two new programs/initiatives – sustainability program (started early 2015) and a resiliency program. Participation in ACWI: SOH and its working groups, SOS, SSWD, Climate Workgroup.

Shapiro – EPA – A couple of major rules issued recently: the Clean Water Rule, issued June 29, EPA and COE jointly (that rule has been challenged in court and its implementation is under a stay until it's decided which courts have jurisdiction); Sept 30 we finalized a rule governing water discharges from steam electric power plants, which are source of major toxicity (no litigation on this one yet). NARS. Rivers and streams survey; lakes survey. We are actively working with ACWI Climate Workgroup and the NWQMC. Urban-stormwater-related issues are a big topic in our grants right now. We are also working on guidance on acceptable levels of HABs for recreational purposes and are working with the drinking water community.

Loucks – ASCE – Our next environmental and water resources congress will be held May 22-26, 2016, in West Palm Beach.

Michelsen – UCOWR – Our annual conference will be June 21-23, 2016, and includes Feds, States, universities, private sector. The AWRA conference will have some special sessions on OWDI, and the IMPACT issue on that should be released in January or February. In Texas, we're completing our 50-year water plan that will be released in the spring; all the regions have conservation as a major issue, but there's only so much water you can conserve. A&M is working on use of UAVs for remote sensing, and a lot of the data being collected is water-related. Major reservoirs are below 10% storage capacity

(although they've been as low as 3%); there's no doubt we have a drought. [Go to <http://www.pdnwc.org/> and click on "Interactive GIS Project" in the right-hand navigation bar.]

McLaughlin – NCASI – The roots of our organization go back to 1943. We are a nonprofit environmental organization; relative to forest products industry; pulp and paper manufacturing, forestry, and all the attendant issues, including water quality. NWQMC is very active and die-hard, and I've been participating with them for several years. One issue NWQMC's WIS workgroup is doing is writing a set of fact sheets that address topics like "understanding uncertainty" (and other topics that sit on the nexus of the science and decision making). Water resources decision statistical confidence illustrator. It is useful to see the dialog that can happen in the setting of ACWI.

Lowry – ICWP – Members are States and interstate groups (policy-making entities) like DRBC and ORSANCO. Water Use Data and Research Program – USGS finally has the money, as well as the authorization, to issue grants under this program, and the States are using the money to write their plans to find where the gaps in water use information are. Water planning is a hot topic for us, as is continuing support for basic data collection, which ICWP has been promoting for years. We're wondering how the budget structure change will change our advocacy of the basic data collection programs; we will need to talk with USGS officials about how we should adjust our approach. New pumping station – using groundwater to grow rice – is this really what we're doing now? ICWP annual conference was held September 29 – October 1, 2015, in Little Rock, Arkansas.

Pletl – NACWA – NPDES, Focused on priorities and perspectives of publicly owned wastewater treatment facilities in cities and wastewater permitting. Surprised not to hear anyone mention emerging contaminants today; we are looking at how these chemicals enter the waste stream and ways we can address the problem. EPA work on criteria for controlling viruses may be finished by the end of next year, so it's possible that wastewater treatment facilities could soon be required to meet certain standards related to viruses at the end of the pipe. Working with permitting office at EPA to try to make sure the way we permit supports the clean water act but permits flexibility; work with emerging contaminants; interested in looking at how chemicals enter waterways.

Hunsicker – NACP – We're an offshoot of the American Planning Association, so we include private and public groups across the country. Florida is now focusing on climate change issues in communities and applications to coastal and upland States. Saltwater intrusion, failure of underground infrastructure for stormwater collection, and effect on roads, are all major issues for us that result from the threat of climate change. Very important to us: FEMA floodplain mapping and updating the maps, using data that come from the streamgaging network. Local governments usually end up being responsible for compliance to NPDES, even though we don't control land use in the surrounding areas; we struggle with how to measure contaminants and how to connect cause to effect.

Wunsch – AASG – Recently completed their Fall Liaison, in which they met with government officials and others to express support for important projects. We are especially involved in the NGWMN sponsored by SOGW. A lot of the groundwater monitoring networks in the Nation are operated by State geological surveys. We had an opportunity to put together a geothermal data system that provided information on geothermal energy across the country; water is a huge component of this, so the site may be valuable to ACWI members: stategeothermaldata.org. We are seeking to partner with other agencies – open source. Our Annual meeting will be held in Alaska this year. Delaware GS just enrolled to become a data provider for the NGWMN. We are a key partner in Delaware Environment and Observation System, which provides lots of data in real time from satellite telemetry. MACRI (Mid-

Atlantic Coastal Resiliency Institute) has lots of information on estuarine flooding, etc., and involves several universities; they will focus on climate change related flooding, among other items.

Goldstein –EPRI – We are a 401-C3 organization, with a research mission. Water is an important topic for the electric power sector. We recently signed our second Memorandum of Understanding with the National Science Foundation to start a jointly funded program related to the energy/agriculture nexus. Working on novel cooling technologies for thermoelectric plants and we were awarded two competitive grants. Getting ready to issue forecasts for water use in the electric power sector based on what generation fleet will look like in 2030; this is based on models developed by EPRI and NREL. We're involved in water quality trading research, with a greater emphasis on environmental economics, climate resiliency, and watershed protection. DOE/COE/BOR held a joint meeting last week addressing issues related to hydrologic impoundments and sedimentation. More and more, we're working on issues related to endangered species, and there's going to be even more of that in the near future. An agreement between services to clean up endangered species list by the end of 2016. EPRI will start an endangered and protected species program in early 2016; working with FWS, NCASI, and others. It's to everyone's benefit if we work together.

Further observations:

Heiskary – Emerging contaminants – we recently published a study on them based on national lakes assessment (information available at <http://www.nalms.org/>).

Beck – No one has mentioned concern about national security as it relates to the issue of emerging contaminants. We might want to consider bringing in DOD as we move further into the area of emerging contaminants.

Werkheiser – USGS has recently been involved in a National Security Council discussion involving the topic of drought.

Freedman – It's really hard to get your arms around all the stuff that's going on. In WRACCW, a couple of years ago we did an inventory of key documents, and that's helpful. But we need a more structured process.

ACTION: Tonight Wendy will try to group and categorize the topics we've discussed today, and tomorrow we'll delve more deeply into them. **[ACTION COMPLETE]**

McLaughlin – I suggest delving into the [ACWI website](#), because lots of great information has already been assembled there.

Schreiber – I'm here representing ASCE, but I am a member of NGWA, and since they couldn't send anyone to the meeting today, I want to introduce Lauren Schapker to the group; Lauren is NGWA's person on the ground in D.C. (and is working closely with several of the ACWI subcommittees). Also, I should say that NGWA will focus on the topics we've talked about today and will contribute something to the discussion, in the near future.

Report from the American Society for Civil Engineers – Eric Loucks, ASCE

Leading technical activities –

- Envision Rating System – ASCE and Harvard collaboration; greater demand for sustainable infrastructure; a way to rate sustainability of civil engineering products in 5 categories – quality of life, leadership, resources allocation, natural world, climate and risk
- Report card for America’s infrastructure - infrastructure funding needs by 2020
- International stormwater BMP database (www.bmpdatabase.org) initiative

EWRI Task Committees – short-term technical committees formed to address a particular problem. These usually involve a 2-year delivery commitment. Typical products include books, manuals. There are currently 52 committees operating working in diverse areas.

Takeaways – collaboration between government, university and private sector practitioners through task committee process; members are on the front lines for addressing numerous critical challenges (climate change, aging infrastructure/efficiency improvements, sustainability; most task committees integrate multiple research results into standards, practices and guidelines.

Remer – Implementation of Federal Flood Risk Management Standard; updated exec order to 1198. New updated order requires that any time new investment requires a new cost-benefit analysis.

Norton – We’ll talk about the Federal Flood standard tomorrow. If we need more discussion, we can set up a webinar/presentation.

Q: Would that include monitoring devices that might be cost shared? R: That’s a good question. Thinks there is discretion given to agencies.

Schreiber – Operations, maintenance, and monitoring – get this into the standard way of talking about the issues. Start thinking about what we can do to augment the conversations.

Bill Werkheiser added that this would be a good robust conversation.

Brief discussion of the Federal Flood Standard:

- This topic was raised by Whit Remer (ASCE), subsequent to Eric Loucks’s talk on ASCE activities.
- Does this standard apply to monitoring instruments? Or are they not covered because they’re designed to be in the water? It seems like there’s discretion given to the agencies to know where this standard should be applied and where it doesn’t make any sense.
- We will discuss this topic more tomorrow, and Wendy will schedule a webinar/teleconference technical presentation on the topic for later this year.
- **Schreiber** – Instead of O&M, we should talk about OM&M (Operations, Maintenance, and Monitoring); if we can get people to start thinking that way, it might help in the long term.
- **Werkheiser** – What does “best available science” mean in the context of the Standard? That’s a topic for a future date.

Subcommittee on Ground Water accomplishments and plans – Bill Cunningham, USGS

Status Report on the National Groundwater Monitoring Network

We have been in front of you since 2007 talking about the great things the SOGW is doing. We finally have an appropriation for the National Groundwater Monitoring Network (NGWMN), so it's time to "put our money where our mouth is."

Groundwater *is* the base flow in streams, so groundwater and surface water are inextricably intertwined.

SOGW is meeting tomorrow and Thursday, so let us know today if there are any issues you want us to tackle.

The SOGW mantra: Walk before running. Be flexible. Be inclusive (inclusive standards and procedures). Learn from other countries. We don't require the gold standard for the data we include. Pilot testing has enormous value. Data owners retain their ownership of the data.

Network Portal Data Model – CIDA has been a critical resource in making the web portal a reality, both for groundwater and for water quality.

There is a huge difference between a network and a database. NGWMN does not have a big database of all the data that's available.

2016 Plans/Timeline (Daryll Pope)

- Working on cooperative agreements to bring data into the network; tip sheets designed to help this process.
- Put tools in people's hands
- Cooperative agreements in 2 phases.... Funding to those we worked with on pilots first; in next few weeks, hoping to get some agreements started.
- Worked w/ MT, TX, IL, UT to get exiting work finished; 2016 new data providers

Tip sheets have been created to help data providers with common tasks, such as adding new data to the network (see <http://cida.usgs.gov/ngwmn/learnmore.jsp> and click on the "Data Provider" tab.

Competitive funds available in FY 2016 – about \$2 million will be in grants.gov within the next few weeks. SOGW will notify ACWI when the opportunity becomes available. Funds will be available to State and local water resource agencies, for new activities and for ongoing support to existing data providers.

Bob gave an overview of the history of the SOGW and acknowledged SOGW members and contributors, ACWI, NWQMC, and other ACWI groups (coastal network, ongoing support, guidance, and interaction), and administrative support. He gave an overview of "why we need a SOGW" – we need to raise visibility of groundwater. It is literally invisible, lacking public attention, often a 2nd cousin. Groundwater is difficult and costly to characterize. As a grand overview – fill the "groundwater gap" of ACWI (2006-7); sole purpose: national network, SECURE Water Act (2009). We are now at formal full-scale implementation.

Funding Outlook – Lauren Schapker

- FY 2016 – continuing resolution - \$2.16 million
- Long-term budget agreement; good support in Congress
- FY 2017 appropriations cycle
- Line item of \$3.16 million in Senate, shout-out from House; still trying to work towards some sort of long-term appropriations agreement
- Wait and see approach

What can ACWI do to help?

- Spread the word by distributing the program announcement when it comes out.
- Encourage participation by submitting a proposal or convincing someone else to submit a proposal.

Questions and Comments:

Wunsch – At one time, we had a good intersection of surface water and groundwater, with some individuals serving on both SOGW and NWQMC, but we have lost that because people can only serve on so many groups at once. I would encourage the National Monitoring Conference to include groundwater. If any of you have groundwater people who might be available to serve on NWQMC, and there's a vacancy, then please consider encouraging them to join NWQMC. Or maybe we need a liaison person to go back and forth between NWQMC and SOGW, to take news and ideas back and forth. Dave referenced the fact sheets and encouraged everyone to read them and look at what is being asked. He is hopeful that there can be liaisons at the National Conference. It is important to re-instill cooperation.

Rowe – We are working hard to bring groundwater issues to NWQMC, and we have several groundwater sessions scheduled for the upcoming National Monitoring Conference, including a session on the NGWMN. We want to provide a more holistic picture of water in the U.S.

Beck – If you are a pilot State, does that disqualify you for a grant? **Answer** – No. **Beck** – Looking at regions, it seems there is an opportunity if you have a pilot in cooperating region. You could then learn from a pilot State. Think about that in some of your criteria.

Freedman – I'm trying to get my arms around the question of "how much data do we need?" How big is the groundwater database (even though it's not really a database)? Do we need an order of magnitude increase in the number of wells? Do we know how much we need? **Answer** – that's one of the things we learned from the pilot because we had very wide criteria. In the tip sheets we're producing, we're trying to come up with ideas that might give us the beginnings of an answer to your question. We have looked at this question, but we can't give an answer (yet), so we're asking States and pilots to identify data gaps, to help us figure out where we should start. One factor that's critically important is this question: "what do the data providers have?" Then we can determine which data meet our criteria. We will probably end up with thousands of monitoring locations across the country.

Wunsch – Not every well that a State or local agency might have can be inducted into the network. We have priorities for what makes a good well – long historic record, location, water-quality sampling capability, etc. State by State, the available data is a real patchwork.

Norris – When we started NSIP, we looked at where we had sites with long records, and where sites were already in use for particular purposes, and then we looked at where new sites were needed to serve a specific purpose.

Freedman – What’s the end game? Looking at where sites are and where new sites are needed for specific purposes, as NSIP did, is a smart way to approach the problem.

Determining the number of wells needed, will help inform the discussion of how much money is needed to fund the full program. Some people have already asked “what will this cost if it’s implemented across all 50 States?” But right now we don’t have an answer for that.

McLaughlin – I have a proposal, in the brainstorming context: a new ACWI Subcommittee on Water Resources Decision Making. This group would be a spearhead for accumulating various success stories that speak to how decisions are improved, how the information has been improved, through the use of models and improvements in available data, improvements in data interoperability, etc. We really need to be able to articulate how the improvements we have made in the science are helping people to make better decisions.

Rowe – Numerous other USGS programs (NAWQA, RASA, NSIP, others) have all gone through this process, so the experience of Federal agencies can help inform the process of scoping a network.

Michelsen – One thing that would help most is to put an economic value on this information. But as an economist, I know that’s very challenging. I encourage additional discussion of this topic because that’s what will sway Congress.

Beck – The experiences of Wisconsin and Michigan and their different reactions to proposals from bottled water companies (Perrier and Ice Mountain) could also help inform the discussion of economic value.

Wunsch – Another important point about NGWMN is that it’s not just a bunch of data that will be compiled for use by scientists. The whole point of the network is to make this data more visible to the non-science public. Ideally a citizen should be able to get data about well levels near home, to help determine whether there’s going to be a problem. Knowing where all the wells are can help us figure out where water is moving between States, and it can help with decision making in the hydraulic fracturing process.

Wednesday, October 28

Water Resources Adaptation to Climate Change Workgroup – Paul Freedman, Water Environment Federation

Paul gave an overview of the history of the WRACCW and a recap of workgroup activities over the past year.

- Created in 2012
- Membership – about 40 organizations 9 State, local, academic, non-profit, Federal, other ACWI subgroups
- Co-chaired by WEF and EPA/OW

Activities:

- Monthly conference calls – provide opportunity for public education
- In-person meetings (2/14)
- Subcommittees
- Annual workplans
- Website
- Reports and recommendations development

Next Steps Report:

- Recommendations in 5 key areas – water data and information, vulnerability assessment, water use efficiency, integrated water resource management, training and capacity building
- Summary of recommendations appended to slides and will be available online

Since last ACWI

- 10 monthly calls – minutes available online, presentations by Experts: 21 since last September, management of workgroup operations, round robin reports
- Website update – presentations available online
- Memo to CEQ on NEPA/Climate Change Guidance
- Memo to interagency workgroup on 2015 implementation plan for national action plan on climate and freshwater resources
- Memo on Federal agency plans for “refresh” of 2011 National Action Plan

Selected Presentations – experts are brought in from membership and private sector; draw from a wide range of diverse constituents; presentations are valuable

- Water utility climate alliance (WUCA) reports
- Corporate responses to water risks
- Conservation organization drought recommendations
- Federal flood risk management standards
- Water theme of climate data and tools initiative
- State/tribal/local leaders task force
- Draft climate and health assessment report (EPA)
- Association of Climate Change officers water training

- Drought in the southwest (NOAA, BLM)

2015 Climate/Water implementation Priorities

- March 2015 memo to interagency water/climate workgroup called for: expanded coordination among agency climate plans and strategies, coordination of Federal agencies at regional level, focus on IWRM, integration of new flood risk management standards in climate plans, identification of critical new funding needs, vulnerability index (called for reevaluation of this)

Future directions

- Continue advice and information exchange functions. Allows dissemination of information to a wider audience.
- Continue input to Federal agency implementation of NAP.

What needs do the ACWI member organizations have that the WRACCW might be able to help with?

Lowry – In the Colorado Basin and other places, I see attempts to scale down global climate models to the basin level, and the result is huge variations in results. That divergence is not as wide in less arid areas. Has the committee looked at this issue? And is it part of any of your reports? **Freedman** – Yes, we have mentioned it, but we have not delved into the issue. The downscaling of models is definitely a pressing technical need that deserves attention. **Lowry** – There is a need to describe this to the general population. **Freedman** – This is a worthy topic.

McLaughlin – One of your points was to cooperate with other ACWI subcommittees, and that's a great idea, but it can be challenging. Does the committee have any more ideas on how collaboration with subcommittees can occur? **Freedman** – It has been a passive activity; some folks wear dual hats or sit in on other committees, so there is some cross-over, but it's passive in the sense that we're just sharing information. Last year, we had a webinar on the "alphabet soup" of subcommittees and how they interact. We do not have a formal plan in place. There has been some question about whether we have too many groups. The issue then becomes is this opportunity for more collaboration or more duplication. It's a frustration that we all seem to have.

Norton – What Paul Freedman said is absolutely right: there are many people who participate on multiple ACWI subcommittees, which results in a mostly passive transfer of information among those subcommittees. The solution might be to have joint teleconferences so the various subcommittees can interact. We can schedule something if you think it would be useful. **Freedman** noted that the ACWI meeting itself is the prime opportunity for this interaction to occur. With fewer groups, there would be less diversity in the input. Is there a way to integrate and cross-connect? **Norton** mentioned Judy Beck's idea of doing a matrix of the various ACWI organizations and their interests. This might help us get to the issue of increasing communication between subcommittees. **Freedman** also noted the Fact Sheets prepared by the Climate Workgroup. **Norton** will send ACWI members a link to the fact sheets on the WRACCW site.

McLaughlin – Is there an opportunity for the various subcommittee co-chairs to have regular sessions to exchange information? I wonder if asking a little more of the chairs and co-chairs is a good idea.

Werkheiser – We have talked about that. **ACTION** – [Wendy will ask subcommittee co-chairs to have regular sessions.](#) **Freedman** suggested that it might be a good to do this before an ACWI meeting.

Vicory – Has anyone thought about how changing streamflow conditions over the long term interfaces with this particular aspect of the water program, recalculating 7-Q-10? **Werkheiser** – A great thing for this subcommittee to take on is the question of uncertainty. Part of this is due to the tools and the science, and part is the way we’re applying what we know. A key question is “what do we need to focus on?” **Shapiro** – We can at least update the hard statistics that we do have, and there’s some indication that we’re seeing some of the effects in our stream data. I admit the downscaling issue is problematic, but it helps in considering the information qualitatively in terms of margins of safety and TMDLs.

Climate Council – how the drinking water community might deal with the question of uncertainty. There’s a link to the document on the WRACCW website.

Beck – We seem to be at a stage in this particular topic where we need to be careful with the language that we use. So much of the language on this topic has been politicized and abused. This causes lots of pushback from decision makers, and there are still a number of government organizations across the country who are not permitted to use the words “climate change.” We may want to consider using the term “resiliency” in talking with communities, instead of talking about climate change or vulnerability. That puts the conversation in positive terms, which are more palatable to decision makers. As we have opportunity to talk about language, we need to keep this in mind. We might be at a stage where we can work with language that will help us.

Mace – It’s important to understand that terminology can be used as a political tool.

Prelewicz – Have you done any gap analysis with respect to utilities planning or other issues?

Freedman – No we have not. This is a topic that is ripe for discussion, and that also relates to the idea of dealing with uncertainty in the course of managing resources.

Pletl – Is there a direct tie-in to this committee from States? **Freedman** – Yes, the States have a role, and there are members who work for States and localities. We identify research and data needs in the States and exchange information with them, but this is one issue on which we have to be very careful about Federal interference in State issues. We could draw up a good plan, but we do NOT want to say “States, here is a plan that you should use.”

Werkheiser – The primary role is to advise Federal agencies. Providing tools and advice to States is also within the scope of the group.

Report from the Subcommittee on Spatial Water Data – Nate Booth and Al Rea, USGS

Progress on Open Water Data Initiative

Nate acknowledged leadership in the room who play a role in contributing to this activity. Thank you to ACWI for your recommendations. We take them very seriously within the USGS OWI, and we have already made a lot of exciting advancements.

It was a little more than a year ago that Anne Castle charged the ACWI and SSWD to be a leader with the OWDI. This effort develops new capabilities and promotes the mechanisms that we already have in place, through ACWI and other platforms, for making water information more accessible to a wide variety of users. The charge recognizes that ACWI has used the internet as a way to disseminate data. The idea is not to supersede activities that are ongoing, but to enhance - move to support innovation with Big Data.

The OWDI impact is important, and this activity has brought many non-traditional players to the table. SSWD interviewed other ACWI sub-groups and other Federal agencies to see what datasets are available (80 have been made available). We've conducted congressional briefings, briefings for the Western Governors' Association, and others.

Apply modern ways to do project management. We are building solutions, not just writing reports. Some of these include visualizations (for example, drought). A visualization for the Lower Colorado is in progress.

OWDI as a challenge

- Access to water data is difficult – collected by hundreds of agencies; no common infrastructure except the internet, waterml2 new exchange standard (O&M)
- Understanding connections requires a geospatial framework – landscape to stream, and stream to stream

NorWest Stream Temp – data from over 60,000 agencies; >45000000 hourly records; >15000 unique stream sites.

- Took 12 staff years to do this –this is the hard way to get data. This is the issue we face and want to improve upon.

Showed Open Water Web graphic (see slide)

- Status of the Water Data Catalog – locate the data you need
 - rather than create something from scratch, we plan to piggy-back on the same catalog that the Climate Data Initiative is using for their water theme, though we'll have a separate landing page
- Water data as a service – machine readable
 - NWS is now putting out their forecasts in WML2 format
- Enriching water data – we're linking data to a standardized geospatial framework (NHDPlus)Community for water data and tools – a “clearinghouse” “market place” for getting the data, code repositories

We have had great engagement on this topic – about 40 people on each monthly conference call and over 100 people on our mailing list. There will be six tracks on OWDI at upcoming AWRA conference. ArcGIS Online web map: <http://arcg.is/1EIL4bP> -- take a look and please give us some feedback. You do not need to purchase/have ArcGIS to use this resource.

- Al Rea gave a demonstration of the ArcGIS Online capabilities for OWDI NHDPlus version 2.1 framework datasets.

Lean startup methodology – don't start your project by writing reams and reams of paper; start small and get to a point where you can learn from your users; a cycle. Make the cycle as fast as you can and let the customer steer you through the process. Go through it as many times as you can iterating toward a better solution. Solve problems incrementally over time.

Started with use cases – define use cases that respond to societal needs and cover broad range of water resources issues (see slide)

- use these to identify critical data inputs
- emphasis is on the data inputs – focus on these first

3 use cases

- National flood interoperability experiment
- Drought decision support system
- Spill response tool

Common data needs – found early on there were a couple of basic needs

- NHDPlus V2.1 – national in single file geodatabase
- Sites indexed to NHDPlus V2.1 network

Status: Water Data Catalog

- Climate Data Initiative – water theme; use same catalog (may do some branding w/ a separate landing page)
- Linked data catalog – this will be a major effort – Dave Blodgett will lead this. Link data to NHD framework and share data; a place to register data and how it is related to the NHDPlus. Can query the catalog and find your data.
 - Federated data model
 - Data discovery using upstream/downstream navigation
- Data quality info
- Machine readable ontologies – common data dictionaries that everyone agrees on.

Status: Water Data as a Service

- NWS forecasts and NWIS data as WML2
- Robust serving capacity is necessary
- Slow services aren't used -
- Repackaged seamless NHDPlus data for download – useful variation
- Metrics of service usage needed – see how much they are being used; determine how useful they are.

- Need more datasets

Status: Enriching water data

- Linking data to a standardized geospatial framework (ex. NHDPlus) – get a good upstream view very quickly
 - Sites with observations and measurements
 - Modeling parameters for catchments
 - Better integration of geospatial layers (ex. link WBD HUC 12 layers to NHDPlus network)
 - Network trace (upstream/downstream) capability is key

Status: Water Data and Tools Marketplace (Community) – have built an incredible community

- Community dialogue (AWRA – upcoming 6 sessions, SSWD)
- Web-based forum needed (wiki or similar)
- Code/tool/procedure open source repositories (ex. GitHub) – some members not able to access it. We will be looking for alternatives. Look for places to share tools and open source.

OWDI examples –

- ArcGIS online web map showcasing some OWDI data services – arcg.us/1EIL4bP
 - Free and open resource. No account required.
- National de-normalized NHDPlus V2.1 download – looking for feedback on whether this meets your needs. Provide feedback in the next couple of weeks.

NFIE (National Flood Interoperability Experiment) (Ed Clark) - update on activities and the connection that this use case makes between NWS concerns and the rest of the water community.

- Concept originated from David Maidment in 2014
- Good advantage to bring in academics, students, etc.
- Goal to bring graduate and postgraduate students to complete projects to advance capabilities for flood forecasting. Resulted in WRF (National Center for Atmospheric Research)
- ACWI was able to influence how we implement
- Allowed us to quickly adopt concepts rooted in community effort.
- Hope it makes hydrology more visible
- NFIE ended in September. Will continue to refine with student support next summer through summer institute.

Rea – Spill Response Use Case – Gold King Mine Spill ICWater preliminary results – ICWater is a desktop application originally developed by the Forest Service that can be used for modeling spills.

There is a wealth of data is available at your fingertips.

McLaughlin – re: mine demo. Is there a good place to go to look for more info on time of travel predictions? **Rea** – Bill Samuels is the principal investigator on that, so give Al Rea your card and he'll put you in touch with Bill. Al will put Doug in touch with Bill.

Freedman – One of these efforts seemed to take lots of manpower. For budgeting, what was needed?

Rea – This was a one-time project where they collected data for the PNW, and the data is already getting stale. The project to compile the data finished up 3-4 years ago. This was done the hard way. It took lots of brute force (lots of phone calls, lots of staff time), so this type of effort is not sustainable.

While, we got good data and good value, but we can do better. What we need is a constant data stream that people can tap into.

Werkheiser – What would it take to do it the new way? **Rea** – It would take a lot to get 60 organizations from all levels to contribute their data in a seamless machine readable manner. It won't be easy to do.

Werkheiser – So, one of the take-home messages is that OWDI is as much a cultural challenge as it is a technical challenge. And, there's also a need for a budget to sustain the effort, but we don't know (yet) what the budget would be. **Rea** – The technical challenge is far less daunting than the cultural change.

Our goal is to make open data sharing part of "business as usual" for *everyone*. **Freedman** – At some point, you will need to address the budget issue. **Rea** – There aren't a lot of resources attributed to OWDI. There is a general mandate in Federal environment to share data. The key is to make this part of "business as usual." Make data sharing part of everyone's business. If we can do that, we'll have a lot of data to share.

Holdsworth – I want to stress the importance of making the data-sharing template a commonly used thing, so you can spend your manpower resources quality assuring the data instead of collecting it. One question we need to think about is archiving the data because there's always the chance that one of the providing orgs could disappear; have you discussed that? **Answer** – We have talked about templates, best practices, exemplars of how to make data sharing easier. As far as the archive goes, we haven't taken any steps in that direction yet, but we have discussed the possibility of caching some of these services centrally (though we don't know where or how yet). **Dabolt** – NSDI has been struggling with the idea of keeping these various data streams persistent; we have committed to making info that's valuable to multiple agencies available through the NSDI platform.

With a common framework and services, we don't have to manage every solution. Customers will be able to solve the problems themselves.

Clark – Deterministic forecasting is dead. We're moving into a new world that relies on high-performance computing and probabilistic forecasting. Characterizing uncertainty is at the forefront of our efforts right now at the new NWS National Water Center in Tuscaloosa, Alabama.

Michelsen – IMPACT and JAWRA are coming out soon with papers that address OWDI and uncertainty, etc. Note – these products will be highlighted on the ACWI website.

Report from the NAWQA National Liaison Committee – Bill Wilber, USGS

[This is a replacement for one of the original agenda items that had to be cancelled at the last minute]

- Background and history of NAWQA program: broad goals have not changed during the lifetime of the program (to answer the questions: what are the water quality conditions across the Nation, and how are they changing, and why?).
- Ag chemicals, nutrients, VOCs, emerging contaminants.
- Focus on large rivers and tributaries.
- Groundwater quality assessments make up about one-third of monitoring under NAWQA, and the program is synced up with NGWMN.
- NAWQA was designed as a perennial, long-term program, which can be difficult to sustain in an environment of scarce budget resources.

- The NLC was formed to ensure that NAWQA reached out to States and localities and other Federal agencies and got feedback that helps to inform program communications.
- The NLC hasn't had anything to report to ACWI in the last couple of years because they haven't met, now that the latest round of NAWQA is underway. They will be meeting more again as this round of program activity comes to a close and the next round begins the planning phase.
- Cycle II: Monitoring of long-term trends, use of regional-scale models (SPARROW, Watersheds Regression Approach for Pesticides [WARP]).
- Cycle III: National research committee discussed what should change and what should stay the same in the third cycle. Determined that some of the sampling sites that had been dropped due to resource limitations needed to be resumed, and sampling frequency would need to be increased. This resulted in a network of about 103 sites, concentrated in large rivers.
- Worked closely with NWQMC on the National Network of Reference Watersheds.
- Cycle III started the year of the sequestration, so we have improvised and have gotten Cycle III off to a good start. Feedback: "we like what you're doing with the modeling, so continue that." We are trying to convert SPARROW from Fortran to R, and some researchers are working on a dynamic SPARROW model.
- Would like to work with WEF and NAWQA to check some datasets and improve some models.
- Would like to get more information on fertilizer applications, but that has been problematic, so we rely mostly on fertilizer sales data.
- We know that sediment remains a huge issue. Originally NAWQA was focused on pesticides and nutrients, and their tools weren't useful for looking at sediment. Working with CIDA, NAWQA has established a sediment portal (including streamflow records, watershed characteristics, etc.), and now we're trying to figure out how get a sustainable sediment program that not only collects high quality records but also converts those records to sediment models. We'll probably work closely with COE on that. We will probably have a national model for sediment in the next year or so.
- More timely information is vital. Cleaning up and synthesizing the data we've collected takes a long time. The [Water Quality Tracker for Streams](#) product is out now. Estuaries info, pesticides info, [WARP mapper](#). We are making strides in the direction of making results available quickly, but it's an ongoing challenge.
- [National Circular for Water Quality in Principal Aquifers](#) over the past 20 years of the program. Reports like this are typically released in concert with a Capitol Hill briefing; in this venue, we try to present the results in a way that is useful for a lay audience.
- Major new focus of the program is on groundwater loads and TMDLs.
- Where are we going in the future: I heard the term HABs yesterday at least 10 times, but that wasn't something we had planned to look at in Cycle III. Clearly it's an issue now, so we'll be revisiting the topic at USGS, and within NAWQA. There's also lots of good research on HABs occurring through the Coop Program and NRP, and we just need to synthesize the results. Unconventional oil and gas development is something else we'll probably be looking at. We hope to have plans for these efforts done within the year.

McLaughlin – USGS has done a lot of work on surrogates; get a regression model to make predictions about concentrations of a host of other parameters. Can you say anything about that? **Wilber** – If a model gives good results and is documented, we would use it; we are flexible.

Holdsworth – I am curious about the liaison membership. **Wilber** – Anyone who wishes to participate can do so. We had a lot of discussions about the effectiveness of our liaison meetings. We never asked

what you need? Last year, open meetings, but targeted specific people. Meetings where we have gotten people involved have allowed us to learn what people want.

Follow-up from previous day's Brainstorm Session

Review of the list Wendy compiled during yesterday's sessions. Members contributed additional topics to the list.

Werkheiser – It is good for any organization to look at itself to determine how effective it is. This may be true for ACWI as well. If we don't have impact back to your agency, we might not be that effective.

- Discussion – What is the effectiveness of ACWI? Are we having an impact?

McLaughlin – Yes, the list is great, but what are we going to do with that list? When we meet at ACWI, there's not time to address specific topics. This would be one way to evaluate ACWI. It's in the ultimate decision context to determine how effective something is. He will volunteer with co-chairs to push into that specific topic for the next meeting. Topic – dealing with uncertainty issue – maybe we can get at the very top thing if we dig at some of the issues.

Pletl – The list is there because we were asked to tell ACWI what we are working on.

Vicory – This is the lens that we have to look through.

Michelsen – Integrated water resources management has been brought up several times.

Lowry – We're mixing apples and tomatoes; we're doing what and how. The "what" is the gist of what is there. If we want a comprehensive list of topics to bring to ACWI, there's a better way to do that. Notes on how ACWI does business. Items on AI list from last time – maybe we're not as far along as possible. Maybe we can look at this.

Werkheiser – Do the things you're working on rise to the level of ACWI? Look at both the how and the what. There is not a lot on drought science on the list. His feeling is that with drought being so prevalent, we don't have the tools available to mitigate and evaluate this issue.

Evans – Ecological water needs; seeing a growing interest with this; water census

Goldstein – Biggest unknown is with agricultural withdrawal versus consumption.

GOES satellite – rises to issue of National Security – threat to water data; **Werkheiser** – Also impinges on earthquake warnings, etc.

Beck – Climate change has been exacerbated. Takes the problems we have and speeds them up. It would be good to look at snowpack and drought. Look at effects of climate change.

Wilber – In the 1990s, the issue of sediment was raised. From his perspective, he would like to hear if this is still a priority. There were some positive things going on. What are we trying to do? Get Corps and USGS together. Other topic – ancillary data. USDA has a lot of things going on that have the ability to influence what we do. If this is a common issue, ACWI could weigh in and help influence this. We need USDA participation. Looking for where BMPs are applied.

Lowry – The full complement of Federal agencies is not represented at the table.

Heiskary – Are there up-to-date maps available?

Jonas – Sediment ties a lot of issues together. Sediment management can be beneficial if able to do it. Storage per capita has been declining since the 1970s. The population has been increasing since the era of major dam construction.

Round-table updates from members – Part 2 (60 minutes)

Report from the Subcommittee on Sedimentation – Meg Jonas, U.S. Army Corps of Engineers

- Outline of SOS recent activities: SEDHYD conference 2015; planning for 2019 SEDHYD conference has already begun
 - Masterpiece of what they do is the SEDHYD conference. It's the preeminent conference on sedimentation, and attracts the best researchers in the world. The conference approval process was a huge issue. There has got to be a better way!
- National Stream Morphology Data Exchange
 - Need: development of national common reporting standards and a strategy for exchanging consistent stream morphology observations.
 - Ad hoc subcommittee convened to make specific recommendations for advancing a national stream morphology data exchange. Pursuing a fully-funded study to more deeply examine the data needs of the community and existing databases. Trying to get funding to develop these concepts.
- RESSED is online, and RSI (Reservoir Sedimentation Information) is being assembled in an Oracle database
 - Original reservoir sedimentation database included 6618 surveys of 1824 reservoirs. Based on a paper form from the Soil conservation service.

Lowry – Getting permits for dredging can be a big problem, and that continues to be an issue for us.

Jonas – Yes, I'm glad you mentioned that because as soon as you start moving sediment around, you're dealing with movement of a contaminant. We don't have any regulatory mechanism that fits what we want to do. That may be a topic ACWI could take on.

Questions/Comments –

Wilber – I did not get a good sense of what the expectations are in terms of timelines. **Jonas** – NRSST will have a white paper completed in next 6 months. Drought, wild fires, flooding and El Niño provides a good time to update the issues. RESSED database – the core portion is finished, and there is a high percentage of data in the database. The sedimentation database is moving forward well.

Lowry – You mentioned John Redman dam; Kansas is prepared to bring funds forward for dredging, but I'm not sure of the policy. **Jonas** – The issue has been with getting the permit to do the work. There is no protocol that fits. There is no regulatory mechanism that fits what we want to do. I would love to see ACWI take this on.

Round-table updates from members – Part 3

What do we do with the list? Bill and Wendy can sort out the how and what and send out via email discussion. Consider value and benefits.

Peter Evans suggested that they use membership to give reflection on the issues. Where would you get the most value? Most people could get back to ACWI relatively quickly.

Lowry – Keep in mind the relevance to ACWI. **Werkheiser** – We can apply that filter.

Vicory – Let's put good thought into this process. This is important. **Werkheiser** – Yes, we need to make sure we are representing ACWI. **Vicory** – The filter for him is to keep in mind the relationship (need) is relative to water data.

Michelsen – Bring in someone from USDA to participate. **Norton** – We have tried. **Werkheiser** – Use other contact within USGS. **Michelsen** – Also invite DOE. **Werkheiser** – The invitation comes through ACWI.

ACTION – Bill and Wendy will sort the list and then engage the chairs/co-chairs and start an email dialog.

Vicory – There is data out there that we're having difficulty getting to. What is the implication of not having access to that data? What are the potentials for having that data? **Goldstein** – It might be that it just doesn't exist. **Vicory** – We need to be mindful of the data that is potentially out there that we can't get. How can we benefit the Nation's water?

McLaughlin – What risk is there for water resources management when we don't have the data?

General questions –

Lowry – With respect to offering up a new Alternate, does this have to go downtown? **Norton** – Yes, it has to go through the full vetting process. Wendy will talk with Sue after the meeting. The Alternate can participate, they just can't vote in your absence.

Lowry – Is there an Association of State Climatologists? Have they participated? **Norton** – No, there is no one participating on a subcommittee either. It would be a valuable asset to have them on ACWI.

Bill Werkheiser announced that there will be someone new as Chair for the next meeting as Bill will be in a new position. The nominee list is impressive. Bill thanked everyone for their participation.

Public Comment Period

No public comments were heard.

Review of action items and wrap-up

ACTION: Tonight Wendy will try to group and categorize the topics we've discussed today, and tomorrow we'll delve more deeply into them. **[ACTION COMPLETE]**

ACTION – Wendy will ask subcommittee co-chairs to have regular sessions. Freedman suggested that it might be a good to do this before an ACWI meeting.

ACTION – Bill and Wendy will sort the list [of member organizations concerns and interests] and then engage the chairs/co-chairs and start an email dialog.

ACTION – The new GWSI workgroup will convene in the new year.

Adjourn

Attendees

Bill Werkheiser, USGS
Mike Norris, USGS
Wendy Norton, USGS
Chandra Pathak, USACE
Robert Mace, WSWC
Bill Brown, ASFPM
Steve Heiskary, NALMS
Greg Prelewicz, AWWA
Paul Freedman, WEF
Harry Zhang, AWRA
Judy Beck, LWV
Mary Musick, GWPC
Alan Vicory, Stantec
Brandon Kernan, ASDWA
Bob Goldstein, EPRI
Dave Wunsch, AASG
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