

**Advisory Committee on Water Information (ACWI) Annual Meeting  
August 19-20, 2014  
Reston, VA**

**Tuesday, August 19**

**Remarks by Anne Castle, Assistant Secretary for Water and Science, ACWI Chair**

Introductions were made around the room, and Anne Castle opened the meeting with brief remarks about new members, the history and value of ACWI and its subcommittees, and a quick preview of some agenda items (Open Water Data Initiative (OWDI), the ACWI Climate Adaptation Workgroup, the Shrinking Budget Workgroup, the Subcommittee on Hydrology's Bulletin 17C work). She mentioned some key ACWI products (water quality portal and other portals, National Monitoring Conference, Joint Conference on Sedimentation and Hydrologic Modeling) that are much in demand.

**Welcome and Opening Remarks – William Werkheiser, USGS Associate Director for Water, ACWI Alternate Chair**

Bill Werkheiser welcomed everyone and thanked them for coming to the meeting. We appreciate the sacrifices you all make to be involved in ACWI. Bill thanked Jerad Bales, who took over as AD/Water and ACWI alternate chair while he was detailed to another part of USGS. Regarding the agenda for the meeting, the content is ambitious, rich, and important. There are many needs in the water community – we've been a victim of our own success, and it's getting harder and harder to deliver clean, cheap, plentiful water. We're out of sequestration, but resources are still scarce, and we're really focusing on using technology to leverage the resources we do have; the OWDI gives us a good opportunity to do that.

**Report from the Subcommittee on Hydrology (SOH) – Victor Hom, National Oceanic and Atmospheric Administration (NOAA); Tom Nicholson, Nuclear Regulatory Commission; Will Thomas, Association of State Floodplain Managers (ASFPM)**

Victor gave an overview of the SOH, noting that ACWI's work is ever more necessary as our Nation faces water shortages. Victor recognized the subcommittee members and work of the group. Activities include quarterly meetings, SOH workgroup meetings, newsletters, and conferences. Quarterly meetings are hosted by member agencies to allow for information exchange within the membership and with senior officials, advisors, and staff of the host agency, and guests. Meetings typically involve a formal presentation on a topic of mutual interest. The SOH collaborates with the other ACWI subcommittees as well.

*Work Group Actions and Accomplishments*

- Hydrologic Modeling Work Group (HMWG) Update –
  - Joint 10<sup>th</sup> FISP and 5<sup>th</sup> Hydrologic Modeling Conference (SEDHYD) is scheduled for April 19-23, 2015, pending Department of the Interior (DOI) approval – thus far conference organizers have received 250 abstracts, 20 posters, 10 model demos, short courses, and a student program
- Satellite Telemetry Interagency Work Group (STIWG) Update – user group for the GOES DCS
  - 118<sup>th</sup> STIWG meeting – May 2014
  - 100 Baud DCP transmitters to be replaced by May 2015
  - Low Rate Information Transmission (LRIT) – alternative to DOMSAT will save money
  - DCPs are the backbone for RT data

- Extreme Storm Events Work Group (ESEWG) Update (Tom Nicholson) – Tom gave an overview of the group’s activities.
  - ESEWG Workshop held May 15, 2014
    - defined needed extreme precipitation products
    - collected feedback from Federal and State member organizations of the ICODS and NDSRB on their user needs for extreme storm data and services
    - Established the ESEWG proposal writing team (PWT)
  - Workshop on Probabilistic Flood Hazard Assessment held January 29-31, 2013
  
- Hydrologic Frequency Analysis Work Group (HFAWG) Update (Will Thomas) –
  - 17 meetings since January 2000 with most interaction through email communications
  - The main task is to publish Bulletin 17C, the first update to the Bulletin 17B (B17B) guidelines since 1982. Will presented an overview of the updates (accessible at [acwi.gov/hydrology/Frequency/index.html](http://acwi.gov/hydrology/Frequency/index.html)).
  - Progress since July 12 ACWI meeting:
    - June 2013 – HFAWG voted to accept recommended revisions to B17B
    - August 2013 – SOH voted in favor of HFAWG drafting a new B17C
    - April 2014 – completed testing report on “Evaluation of Recommended Revisions to Bulletin 17B” – to be published as a USGS report
    - USGS developed PeakFQ 7.0 program that implements EMA/MGB with new confidence intervals
    - Currently drafting a new Bulletin 17C to be published as a USGS Circular (lead by USBR, USGS, and USACE) – draft by December 2014

Wrap-up of SOH Activities for 2014-2015:

- Support the OWDI, water data integration, and connect with Subcommittee on Spatial Water Data
- Review HFAWG Draft Bulletin 17C
- Review ESEWG proposal, scope of work, and workplan
- Joint Federal Interagency Sedimentation and Hydrologic Modeling Conference April 2015
- Complete transition to higher speed DCPs
- Quarterly meetings – October 23, 2014, January 22, 2015, April 30, 2015, and July 23, 2015

**Discussion: Open Water Data Initiative (OWDI) and the Subcommittee on Spatial Water Data (SSWD) –** Anne Castle, DOI; Kevin Gallagher, USGS; Nate Booth, USGS

**Call for ACWI endorsement of the charge to SSWD:**

[acwi.gov/acwi-minutes/acwi2014/LT\\_ACWI\\_re\\_open\\_water\\_data\\_initiative\\_2014-07-22.pdf](http://acwi.gov/acwi-minutes/acwi2014/LT_ACWI_re_open_water_data_initiative_2014-07-22.pdf) and [acwi.gov/acwi-minutes/acwi2014/Open\\_water\\_data\\_proposal\\_to\\_acwi-7-21-14.pdf](http://acwi.gov/acwi-minutes/acwi2014/Open_water_data_proposal_to_acwi-7-21-14.pdf)

Anne introduced the topic with some background. We have a ton of water data, but it's fragmented and not well integrated. We need to make the data more accessible because it's not always easily available and usable. We have an opportunity to focus on this more than ever because there's a national focus on water-related issues right now in the public eye (not just among scientists). She mentioned Integrated Water Resources Science and Services (IWRSS), which provides foundation to support OWDI. Western States Water Council (WSWC) has a Water Data Exchange (WaDE) which focuses on water use, and this is an important component that should be integrated with water supply information. The Open Geospatial Consortium (OGC) will also be key to our efforts. We are reviving the SSWD, which is overseen both by ACWI and by the Federal Geographic Data Committee (FGDC), to help address the challenges that OWDI presents to us.

Kevin Gallagher began the presentation, providing background on why OWDI is necessary and why it's especially timely right now. Open exchange of water information is fundamental to understanding our water resources.

President Obama is extremely committed to open data – this Administration has established numerous policies regarding open data that have direct bearing on OWDI.

Nate Booth talked about the OGC and efforts in Australia to alleviate the effects of the 2008-2009 drought that was comparable to the severe drought we're currently experiencing in the western U.S. We can build upon the pioneering efforts of this group and learn from their experience. The ability to link observational data to hydrologic features is critical. CUAHSI is an important partner on this project (Rick Hooper, CUAHSI rep, could not be with us today, but CUAHSI has been deeply involved in this effort). WaDE is a partner initiative to OWDI, and so is IWRSS. After giving background and illustrating the linkages with other organizations' efforts in water data, Nate established the link to ACWI and its mission. There is a technical challenge, and there is a social challenge (having solutions that take advantage of the technical tools, and making sure people know how to use the tools). The National Ground Water Monitoring Network (NGWMN) is interoperable with the Canadian network; we need more of this type of collaboration across interstate and international boundaries. The Water Quality Portal is another tool that figures into the OWDI, and we'll hear a presentation on that later today.

Nate outlined the charge for ACWI-SSWD, and the group prepared for a vote on the charge [[acwi.gov/acwi-minutes/acwi2014/Open\\_water\\_data\\_proposal\\_to\\_acwi-7-21-14.pdf](https://www.acwi.gov/acwi-minutes/acwi2014/Open_water_data_proposal_to_acwi-7-21-14.pdf)]. The steering committee of FGDC has already (in June) endorsed the proposal that was sent to ACWI members in July. Al Rea is chairing the SSWD but is searching for a co-chair; we want to hear about ACWI members' organizations and their interest.

**ACTION:** Wendy will send an email to ACWI members and friends asking for members to revitalize SSWD. People interested in participating should contact Wendy ([wenorton@usgs.gov](mailto:wenorton@usgs.gov)). [Status: COMPLETE]

**DECISION:** Steve Heiskary offered a motion for ACWI to endorse the charge to SSWD. The motion was seconded by Bill Brown. The charge to SSWD was approved by unanimous vote.

### **Workgroup on the Challenges of Monitoring in a Shrinking Budget Environment**

- Background information: [acwi.gov/monitoring-challenges\\_wkg/reports/monitoring\\_challenges\\_report\\_may2014.pdf](https://www.acwi.gov/monitoring-challenges_wkg/reports/monitoring_challenges_report_may2014.pdf)
- Presentation on Workgroup Recommendations – Peter Evans, Interstate Council on Water Policy; John Wells, Minnesota Environmental Quality Board; Wendy Norton, USGS
- **Call for ACWI endorsement of workgroup recommendations and discussion of next steps – moderator**

John Wells described the need for a Federal investment and the role that the Federal government needs to play in monitoring our Nation's water resources. Wendy Norton gave background on the charge to the workgroup and the process the workgroup followed.

Peter Evans described the workgroup's strategy – guiding principles formed the basis for 12 recommendations. He added that our society has developed the expectation that we'll have abundant, clean, cheap water. USGS provides the soul of our ability to meet those expectations. In forming their recommendations, the workgroup felt that it was of paramount importance to preserve the monitoring that we have currently, and to expand/strengthen it as much as we can, even if doing so means a short-term deferral of research and analytical studies. It is important to note that this deferral cannot be long-term; research provides feedback to monitoring efforts, allowing us to improve our monitoring, and a long-term loss of research will hurt our monitoring efforts in the long-run, in addition to the other things that we lose by delaying research.

Following Peter's presentation, Anne thanked him and commented that she kept hearing "don't cut data collection." She appreciates the group's recommendations noting that additional discussion will be needed for some of the recommendations.

**Hunsicker:** I remember USGS went through an exercise several years ago to prioritize streamgages. Is that reflected in the recommendations here? **Answer:** We were well aware of that when we began our deliberations.

The prioritization that the National Streamflow Information Program (NSIP) did several years ago was intended to stabilize the network so that it wouldn't be disrupted when funding partners dropped out. The current NSIP depends on cost-share partners bringing their money to the table because the "Federal backbone" part of NSIP is too small to adequately cover the country.

**Freedman:** One high value piece that stood out for me was the guiding principles. What I would have liked to have seen in the intro to the recommendations is a statement like "as USGS / Federal agencies implement these recommendations, they should keep the guiding principles in mind." This would keep people coming back to look at the guiding principles again and again, so that when decisions are made, they can be connected back to one of the principles. Peter responded that this is what is intended by the workgroup.

**Vicory:** Everything I've heard so far is spectacular, and I'm very impressed as a "newbie" on ACWI. The recommendations are beautifully thought out. I was intrigued by the recommendation to defer some research. Obviously you can't go back and recover data that you failed to collect. How do you figure out which research to curtail? How do you know what will be useful in the future? You will need some input from the larger community on how the data is being used, so you can determine what research you can feasibly reduce or defer. We should apply ourselves to the challenge. **Answer:** Yes, that's a real challenge, and we appreciate the offer. You know the impacts more than us. We usually have to make decisions about cuts in a couple of hours, so we need to have these conversations with our partners in advance. We will need to keep you involved.

**Skopec:** I'm concerned, from a State perspective, about curtailing of grants, etc. Are there ways we can use technology to make monitoring less labor-intensive, thereby saving money? How do we balance the loss of research and grants against the loss of monitoring? **Answer:** Our workgroup really felt that USGS managers are in the best position to determine what the trade-offs are, and can best make the hard decisions when something has to be sacrificed to the budget axe. We talked at length about new technologies, and that's the genesis of recommendation 12; that just wasn't an area that the workgroup participants had enough expertise in, to allow us address new technologies in detail. We felt that the private sector and universities and others would be able to "bring more horsepower to" the issue of new technology.

**Juch:** On recommendation 6, we're getting back to the issue of data quality. Maybe there should be a recommendation regarding the development of data collection standards and providing training for those standards. Standards have to come from somewhere. I feel this should be strengthened. **Answer:** We did discuss that. Some of us feel that the USGS standards they use internally are the best; others feel that academia and others also have good standards that could be used. Before we promote one set of standards, we need more discussion.

**Betano:** Regarding recommendation 2, it seems like it could be a slippery slope in deferring research and investigations. I would suggest flipping the analysis around: how can we deliver analysis products more quickly (quality assurance takes time)? Or can we make use of automated systems for quality assurance and quality control (QA/QC), thereby freeing up human resources for other things? **Answer:** We were pretty impressed by the efforts that USGS already has underway to automate some QA processes, and we're not sure other efforts need to be undertaken at this point. We were concerned about reducing research, but we recognize that you can only defer these items for a short amount of time. If we don't do the investigative work, how will we know what monitoring to do in the long term? The recommendation to reduce research and investigations is **only** intended to be a short-term solution, and **cannot** be sustained.

**Goldstein:** Are you saying "defer that part of the research that is less critical" or are you saying that "research and interpretation as a whole is less critical than monitoring"? **Answer:** We're not saying any research is less critical. We're only saying that if you have to reduce **something**, and you have to preserve monitoring, then you don't have any choice but to defer research. **Goldstein:** I think it's a mistake to think that budget reductions are only a short-term phenomenon; we need long-term solutions, not a proposal to reduce research. But it's not realistic to think the Federal government is going to invest more in long-term monitoring.

**Pathak:** The team has done an excellent job. Maybe prioritization of monitoring sites needs to be reevaluated every 5-10 years, to ensure that your network design is still giving us what we need.

**Prelewicz:** How would these recommendations be implemented (getting in touch with stakeholders, etc.) if we had to cut something? **Answer:** I wasn't joking when I said we usually have 2 days to make decisions like that. This forum and others like it are the best place we have to find out what our partners' needs are, to help guide us in making the most judicious funding allocation decisions we can.

Peter Evans suggested for recommendation 12, maybe we can have a workshop/get-together of the experts that are already members of other ACWI subcommittees, rather than establishing a whole new subcommittee. That would keep the approach broad and would also take advantage of all the expertise that already exists in Subcommittee on Ground Water (SOGW), SOH, etc. Anne commented that each additional subcommittee formed requires additional resources. These committees work best when given a specific charge.

**Kernen:** I definitely think innovation can be looked at, at the subcommittee level. The group developed a draft concept of what this innovation process would look like, and they really are stand-alone processes. I believe a stand-alone subcommittee could be effective, but we would need several people who have the knowledge, the time, and the enthusiasm for the topic.

**ACTION:** Wendy will share this draft concept with the full ACWI.

**Schreiber:** Discussion of recommendation 12 was educational for us, in discovering efforts like USGS's recent nitrate sensor testing. Something like the X Prize and inclusion of the private sector would be a great way to move innovation forward.

**Comment:** The report talks about the massive numbers of users and stakeholders. Did you discuss other/new ways for USGS to reach out to new stakeholders (and existing ones)? **Answer:** We wanted to encourage the existing USGS processes, but we didn't talk about bringing new stakeholders to the table who may have previously been excluded. Nobody in our group belongs to a stakeholder group that feels excluded. **Werkheiser:** At Headquarters USGS, we could put more effort into advertising best practices that are in use at the WSCs (some Water Science Centers, for example, hold periodic water councils that bring together the local community to talk about important local issues).

**What is the next step?** Do we want the report to be released for a wider audience, or is it primarily aimed at DOI and USGS? We want to have this question resolved and have the task "be finished" by the time we leave this ACWI meeting. We could do some word tweaking tonight and have ACWI take a vote tomorrow. Anne recommended not sending the report to a wider audience such as Congress. She thanked the workgroup for their efforts.

**Demonstration of Water Quality Portal** – Charles Kovatch, Environmental Protection Agency (EPA); James Kreft, USGS; Laura DeCicco, USGS

Charles Kovatch began the presentation noting the importance and value of data. The more data are re-used, the more valuable they become (collect once, use multiple times). Shared data are of even more value as they provide for better planning and management decisions, incentivize collaborative efforts, and make the most of the data collection resources being invested. Benefits of the portal include: it reduces the effort to use other data sources, leverages and protects investments in monitoring data, and supports water quality based decision making. The portal increases access to data through integration of publicly available water-quality data through the use of the Water Quality eXchange (WQX) from the USGS NWIS, EPA STORET, and U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS) STEWARDS. It provides access to data from 400 Federal, State, and tribal agencies and watershed organizations that already use the WQX file formats. The portal leverages web services to make data available. Over 240 million discrete water data records and 2.2 million stations are included with data contributed by EPA, USGS, USACOE, NPS, USBR, 50 States and territories with five more in progress, 130 tribal agencies, and other county, academic, and watershed groups. At its launch in April 2012, the portal had 50-100

visits per weekday with 3,000-5,000 downloads per day from web services. Usage has steadily increased since fall 2013. In March of 2014, there were over 100,000 web service calls with over 40 million records downloaded. Over the past three months, over 1.4 billion records have been downloaded. People use these services. The portal was built using a responsive design so it will work on any device with a modern web browser.

#### FY 2014 Accomplishments –

- Added USDA ARS Sustaining the Earth's Watersheds, Agricultural Research Data System (STEWARDS)
- Enhanced the map interface
- Linked to the National Environmental Methods Index (NEMI)
- Extended and improved web services
- Responsive design refresh

James Kreft gave a demonstration of the water quality portal.

#### Activities for FY 2015 –

- Development
  - Identify additional data partners and sources
  - Examine opportunities to improve data quality
  - Serve biological data
  - Improve mapping interface and NHD based searches
  - Discuss continuous data solution
  - Increase visibility of data in the portal
- Outreach
  - Promote the use of WQP and web services – highlight new tools
  - Promote data sharing

#### Discussion with ACWI –

- Increase data partners – Who would ACWI suggest we contact to participate in the Portal?
- Increase Portal Use – What do ACWI members need to communicate its availability and identify use cases?
- Sensor Data – We want to convey that we are participating in discussions. What questions do ACWI members have related to the Portal and sensor data?
- Taxonomic Registries – We want to leverage one central taxonomic registry, who would ACWI members identify as the coordinator on this effort?
- International Water Quality data standard - What role would ACWI like to play in extending WQX to work within international standards?

**Wunsch:** I'm a member of SOGW and also wearing my State agency hat. One issue we're concerned about is identification of where the data came from; that information needs to be available. **Answer:** Every result has metadata to identify where it originated. We're also working on a technique that will allow each dot on the map interface to be a different color, depending on who collected the data.

**Curtis:** Why are the two databases administered by USGS separate (NWIS and water quality)? **Answer:** They are two different databases for two different purposes. **Question:** Is there a way to put all the data into a single database? **Answer:** The reason the portal came together was to provide a single portal that could allow people to get data from STORET and from NWIS. The portal has been operating for 2 years, and we're just now starting to look at ways we can streamline it. The data are collected by many partner organizations, and the WQX language enables us to expand the amount of data available without having all the data on a single server. **Question:** It just seems that this could be integrated more efficiently. **Answer:** We would be happy to hear your ideas on that.

**Cline:** What is the latency of data from the time it's collected until the time it's available? **Answer:** It varies, depending on the data and the collection agency. Sometimes it's a day or two, but some State data sources publish

their data monthly or quarterly. Donna Myers clarified by stating that data in STORET and NWIS are continuous. Water-quality (QW) data are discrete. QW data latency is a reflection of the QA and analysis process because the analyses take time.

**Question:** WQX contains biological data, doesn't it? **Answer:** Yes. **Question:** What about NWIS? **Answer:** Yes, it also contains biological data. **Comment:** I can see the pros and cons of wanting to serve all the data from a single source, but what the Portal does is hold the data and make it available no matter where it resides.

**Curtis:** Have you looked in to connections with the National Climatic Data Center (NCDC)? **Answer:** We are working with NCDC, but not specifically for QW data. Climate data is important in driving our work with sensors, so it has been in that capacity.

Questions from "Discussion with ACWI slide" – Bill Werkheiser says the ACWI answer to these questions depends on how the OWDI proceeds, so it's critical for the Portal team to be involved in that effort, to ensure we're not moving in separate directions.

**Lee:** When you say you have partners, are you relying on the STORET requirements, or are you looking to capture other State-level data that may not be included in STORET? **Answer:** We are using STORET data, and we are also trying to capture the data that aren't included in STORET. **Question:** I assume you're also working with CUAHSI? **Answer:** Yes we are.

**Question:** Have you connected with National Climate Data Center? **Answer:** Not specifically for water quality data, but that's one area where we should be working.

**Update on ACWI Water Resources Adaptation to Climate Change Workgroup (WRACCW) –** Jerad Bales, USGS; Paul Freedman, Water Environment Federation

- Background information:  
[acwi.gov/climate\\_wkg/Climate\\_water\\_recommendations\\_rpt-april\\_21\\_2014\\_final\\_draft.pdf](http://acwi.gov/climate_wkg/Climate_water_recommendations_rpt-april_21_2014_final_draft.pdf)

Jerad introduced the topic and talked about how the recommendations drafted by the group have been used thus far. Then Paul Freedman gave his presentation, reporting on: the Climate Workgroup's activities to date; resources that the group has compiled that may be useful to ACWI meeting attendees and their colleagues; and plans for the remainder of 2014. All the meeting notes and presentations are on the website, along with the various resources and tools that the workgroup has assembled. [[http://www.acwi.gov/climate\\_wkg/index.html](http://www.acwi.gov/climate_wkg/index.html)] One product/tool that he highlighted is the Climate Change References Database, which is a searchable index of key reference documents. He described the February meeting in Arlington, where the workgroup held panels of industry and government representatives, and where sub-groups met to tackle specific aspects of the *National Action Plan*: data and information; vulnerability; water use efficiency; integrated water resources management; outreach and training. The final report resulting from this effort is on the website ([acwi.gov/climate\\_wkg/Climate\\_water\\_recommendations\\_rpt-april\\_21\\_2014\\_final\\_draft.pdf](http://acwi.gov/climate_wkg/Climate_water_recommendations_rpt-april_21_2014_final_draft.pdf)).

The WRACCW was created in June 2013 and is co-chaired by the Water Environment Federation (WEF) and EPA Office of Water. Membership consists of 40 member organizations. The workgroup was established in response to a recommendation in the National Action Plan to provide information for the effective management of US water resources as the climate changes, to advise the DOI and other Federal agencies on water policy as related to climate change adaptation, and to be a forum for stakeholders to exchange information.

Activities –

- Creation of 2013 workplan
- Monthly meetings and member education
  - About 20 webinars and presentations are available on the [WRACCW website](#)

- [Key reference database](#) – searchable, available since spring 2014, 77 references since June 2014, uses a simple Excel query tool
- Fact sheets characterizing 9 Federal coordinating groups on climate change.
- February 2014 face-to-face meeting
  - 18 non-WRACC speakers
  - Teams in 5 areas of the National Action Plan
  - Team work sessions and report recommendations
- Next steps: Spring 2014 report
  - ACWI briefed on Next Steps report in two teleconferences in May
  - 8 ACWI members provided comments
  - Agreement to post report on ACWI website with a summary of the comments.
- Paul noted that internal priorities were hindered by the 2013 budget constraints.

#### 2014 priorities –

- Input to Federal agencies responding to climate change executive order
- Advise and comment on actions to implement the National Action Plan
- Continue to inform and educate Workgroup members
- Respond to specific requests for input

#### Future directions –

- Continue advice and information functions
- Continue input to Federal agency implementation of the National Action Plan
- Encourage actions proposed in Next Steps report
- Cooperate with other ACWI subgroups
- Cooperate with other climate strategy efforts such as the National Ocean Policy, Fish/Wildlife/Plants climate strategy

#### Questions:

**Question:** Can ACWI member organizations submit further comments on the next steps report? Bill Werkheiser says Yes.

**Goldstein:** "Ecosystems services" is a fairly vague term that means different things to different people. What does it mean to you, and what does it mean to say that policy should take it into account? **Answer:** I think what we said is that ecosystem services should be encouraged to have that assessment as part of the planning process.

**Question:** How about "ecosystem management" instead of "ecosystem services"? **Answer:** That might be better wording. **Question:** Who actually did the database? I'm very favorably impressed with what you put together in such a short time. **Answer:** Paul Freedman's staff at LimnoTech did the physical assembly, but the references were provided by lots of people on the WRACCW, with the effort being led by Carol Collier. If you have new or revised things that should be included in the database, please let us know so we can include it!

**Shapiro:** I want to reiterate Jerad's comments on the Freshwater Climate Change Task Force report. We found the report very thought provoking and timely. As EPA thinks about 2014 and 2015 plans, we'll be considering the issues and recommendations in the report and hope that other agencies do too.

#### General Discussion and Wrap-up

Homework: Give your comments on the shrinking budget document to Peter Evans and John Wells. We'll vote on that tomorrow.

*Homework:* WQ Data portal – think about data partners that should be (but are not) included in the portal.

## Adjourn

Wednesday, August 20

### Opening remarks and recap from previous day

The meeting began by revisiting the Shrinking Budget report and discussing revisions proposed during the August 19 ACWI session. Peter Evans reviewed the proposed revisions for the group. Bill Werkheiser asked if ACWI agrees with the changes with discussion following.

**Langseth:** Can you clarify what the intent of evaluating gages every 5-10 years is? **Answer:** the more things change, the more they stay the same... at least with funding. There should be periodic reviews. **Comment:** USGS will have to implement the plan to determine this. **Response:** These are only recommendations.

**Norris:** Mike questioned what the recommendations are trying to do. There are 8000 gages... are we evaluating gages to include in NSIP? Are we trying to optimize the network or maximize funding? This is my confusion. What are we trying to do every 5-10 years? **Answer:** Try to use NSIP funding to do more than has been done before. Make more gages fully funded by NSIP. Mike commented that we do this every year in Centers. Chandra Pathak recommended removing this recommendation if this is already being done. Bill Werkheiser commented that it doesn't hurt to have the recommendation there. Ari Michelsen – Can't the USGS say there needs to be more funding due to increased water scarcity? Maybe the recommendation should be that we need to increase funding. Chandra concurred. The rationale for the recommendation is that there are increasingly more extreme flooding and drought events occurring. Ari Michelsen – rather than the recommendation, add the need for more funding and rationale in the Executive Summary portion of the report. Martha Juch cautioned against asking for more funding as that was not the original charge to the group from Anne. We should not be disrespectful of that charge. Mike Shapiro added that he is uncomfortable with action that is bypassing the Federal budget process. Ari noted that ACWI is an advisory committee and suggested that a separate memo be included to address this issue. Dave Wunsch suggested that a cover letter can address that issue without putting it into the report. Another comment was made that the challenge is to communicate the value of what USGS does. You need a mechanism to communicate that value; don't assume what others believe. Sue Lowry reiterated that it's important for non-Feds to continue to help. Bill Werkheiser suggested putting the funding issue in a transmittal letter. He agrees that USGS needs to ensure that the value of streamgages is known. ACWI concurred that a transmittal letter is the best way to proceed.

Regarding the report, 12 recommendations will remain and today's discussion will be included in a transmittal letter that will be submitted with the report. **Question:** Is there a recommendation to increase outreach and participation in States? **Answer:** Yes, recommendations five and six talk about this.

Final report is available online here: [http://acwi.gov/monitoring-challenges\\_wkg/reports/acwi\\_shrinking\\_budget\\_recommendations\\_final\\_30sept2014.pdf](http://acwi.gov/monitoring-challenges_wkg/reports/acwi_shrinking_budget_recommendations_final_30sept2014.pdf).

**DECISION:** Sue Lowry made a motion for ACWI to approve the report, with the revisions. Ari Michelsen seconded the motion. The report was approved unanimously by voice vote.

Bill Werkheiser thanked everyone on Anne Castle's behalf.

**Update from Subcommittee on Ground Water (SOGW)** – Robert Schreiber, CDM Smith, Inc.; Bill Cunningham, USGS; Jessica Lucido, USGS; Chuck Job, EPA

Status Report on the National Groundwater Monitoring Network

- Request for ACWI to approved updated Terms of Reference for SOGW

Bob Schreiber began the presentation by acknowledging SOGW members and contributors, ACWI and its subcommittees, ACWI's Executive Secretary and administrative support, and many others. Bob gave an overview of the SOGW noting that the subcommittee was formed in response to the need to raise the visibility of ground water – it is literally invisible and lacks the public attention that surface water (flooding) receives. The subcommittee fills the “ground water gap” of ACWI, and its purpose is to establish a National Ground Water Monitoring Network (NGWMN) – implementation of a nationwide, long-term ground-water quantity and quality monitoring framework. The NGWMN has Congressional authorization without appropriation (SECURE Water Act of 2009). Efforts so far have been on a voluntary basis. The NGWMN will inform and facilitate the OWDI.

Bob continued the presentation with a discussion of “why do we need the NGWMN?” He referenced the following reports:

- 2003 General Accountability Office report – 36 States expect water shortages
- 2005 National Ground Water Association / Association of American State Geologists (NGWA/AASG) survey – GW shortages expected in 43 States, calls for cooperative monitoring
- 2006 Heinz Report – GW data is inadequate for national reporting
- As surface water supplies are fully (or over-) allocated, users turn to ground water

Additionally, ground water analysts need to be able to track trends, identify impacts, analyze and assess, plan and manage ground water resources, and fill data gaps. Key drivers of the network are impact factors such as underground injection control (UIC), groundwater under the influence of surface water, sea level rise and saltwater intrusion, hydraulic fracturing, drought, nutrients, energy-water nexus, and more. Lastly, there is a lack of consistent coverage.

Bob commented that SOGW's early participation is now enhanced with the majority of participation coming from State and local governments, NGOs, and the private sector.

The SOGW put together a Framework Document ([acwi.gov/sogw/ngwmn\\_framework\\_report\\_july2013.pdf](http://acwi.gov/sogw/ngwmn_framework_report_july2013.pdf)) to present the design for a collaborative national groundwater monitoring network, provide guidance for field methods and minimum data elements, standards, and management, and provide recommendations and a recommended implementation plan. An overview of the network was presented noting design elements, subnetworks, field practices, and data standards and management.

Pilot studies validated design concepts, evaluated field practices and data management procedures, and identified network gaps and costs of participation. Benefits to pilots included a single, consistent dataset for shared interstate groundwater resources, data sharing between State agencies, critical review of procedures, and raised awareness for groundwater monitoring. The pilot studies concluded that a collaborative NGWMN is feasible and the NGWMN data portal is a key element to the success of a NGWMN.

The SOGW provided advice for the OWDI based on their experience with the NGWMN.

- “Walk before running”
- Learn from other countries
- Inclusive standards and procedures
- USGS Center for Integrated Data Analytics (CIDA) – serves others beyond USGS
- Pilot-testing value
- Data owners retain data ownership
- Web portal transferability

A demonstration of the NGWMN Data Portal and its status was given.

Water quality is an important part of ground water availability. Some of the initial pilot studies included water quality, but it was limited or absent in others. EPA developed new water quality pilots by providing analytical services. Support from regional EPA labs enables NGWMN to start and provide States time to arrange permanent

analytical support. This began in FY2014 with the Utah and New England pilots. Delaware is proposed to join through Region 3.

Bill Cunningham continued the presentation through an overview of implementation and next steps. He noted that pending available resources, the SOGW will solicit new data providers and initiate the National Program Board. This group will begin to identify the “backbone” sites and address data gaps. Cooperative agreements through USGS will help support data providers. Expansion of NGWMN portal capabilities and EPA analytical services will be important. USGS will incorporate remaining USGS water-level sites and add water-quality sites. Bill shared a slide showing recommended management structure for the network. Funding priorities will require a careful balancing act – support for existing versus new participants, add new wells or increase frequency, water levels versus water quality, drilling, innovative methods.

Today, we would like to request ACWI approval of Terms of Reference (TOR) edits submitted to ACWI on August 19, 2014. The proposed TOR will allow SOGW to help guide implementation of the NGWMN.

**Comment:** It has been suggested during this meeting that one way to establish value of data collection is to do some interpretation/analysis of that data. It would enhance your ability to establish value if you establish some research/interpretive activity on SOGW. **Answer:** I think everyone on the committee would agree with that. I would encourage any SOGW members who are here to offer their thoughts on this.

**Wunsch:** The National Network is able to grab data from many disparate sources, but it's not all available data; it's whatever we could get our hands on. The value added through the portal is that the data are available to people who were not previously able to access it.

**Hunsicker:** I want to understand SOGW work on unconfined aquifers. Virtually every coastal community has an unconfined aquifer. **Wunsch:** Our role is not necessarily to classify. The local experts are choosing the wells; so we're relying on the data providers to characterize the wells for which they're providing data.

**Michelsen:** The discussion about value is interesting. The SECURE Water Act – one of its purposes was water availability. It's important to know how much water is in the aquifer, not just the groundwater level. It's important to know how much is being pumped and what the recharge rate is. That's the type of information we need to have. **Answer:** We're going back to our "walk before you run" strategy – getting the groundwater levels is the first step, and we're not quite at the point yet where we can get data on the other points you mentioned.

**Evans:** Can you talk about the responsibilities of the program board and how they differ from the steering committee? **Answer:** The program board was created to be a voice for the data providers.

**Myers:** Have you defined what an industry standard is? Is it ISO or ASTM, or have you discussed that? **Answer:** Yes, we accept all of those industry-accepted standards. We don't have specific criteria, but if something is broadly accepted in industry, we accept it too. Note that we need to be careful to avoid adopting standards that will violate use of proprietary information.

**Mickle:** Is the technology that has been produced (code) available so others can set up their own nodes that the USGS node can link to? **Answer:** Currently the product is not public, but eventually it would make sense to open it up to the public; first, however, we would want to make sure it meets all the USGS requirements for software releases. We will also be happy to work with data providers closely to help them become data providers who can link to the USGS node.

**Comment:** Removal of some specific words about uses may be a concern; SOGW will put in a full list of uses (augment list that was there formerly to make it more inclusive).

**DECISION:** Charlie Hunsicker made a motion for ACWI to approve the revised SOGW Terms of Reference, to bring it up to date with current activities and goals (with the revision discussed). Martha Juch seconded the motion. The revised SOGW Terms of Reference was approved unanimously by voice vote.

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

- **Call for ACWI endorsement of a resolution on reservoir sustainability:**  
[acwi.gov/acwi-minutes/acwi2014/SOS\\_2014\\_resolution\\_on\\_reservoir\\_sustainability.pdf](http://acwi.gov/acwi-minutes/acwi2014/SOS_2014_resolution_on_reservoir_sustainability.pdf)

Meg Jonas outlined recent SOS activities and previewed upcoming events (SEDHYD, Reservoir Sustainability). There are concerns about the conference approval process because COE approvals can't proceed until after DOI approval has been granted. The COE approval process is long and cumbersome, so they want to get started as soon as possible. Meg described the National and Stream Morphology Data Exchange (NSMDE), Reservoir Sedimentation Database (RESSED), impending update of dam removal analysis guidelines for sediment. She also reviewed the reservoir sustainability resolution, which was passed unanimously by the SOS membership.

**Zhang:** I would suggest adding a footnote to the resolution to clarify terms like "sustainability." **Answer:** Perhaps we could say "reservoir sustainability with respect to sedimentation"? We have been focusing more on physical aspects of sedimentation (volume depletion, recreation impacts).

**Werkheiser:** We could accept some minor changes with a footnote and approve it today. If more substantive changes are desired, we can send the resolution back to the subcommittee for revisions and vote on it later, via email.

**Michelsen:** I suggest that it should be broader.

**Wunsch:** In addition to contamination of sediments, is the SOS Terms of Reference document going to allow you to look at alternative uses of sediment (agriculture, other uses)?

**Langseth:** I realize we're not building many dams today, but I'm wondering if the resolution should say something about new dams. **Answer:** That's a good point. We may want to add that.

**Hunsicker:** I think we should act on the resolution SOS has given us, and then direct them to go back and develop other resolutions that focus on the other issues being raised here today.

**Juch:** I think in this context, the intent of "sustainability" is "long-term sustainability." So I have no problem swapping out "sustainability" for a simpler word that has fewer possible definitions.

**Evans:** I wondered why this is limited to just Federal agencies; the problem is not limited to Federal reservoirs. My sense is that the word "sustainability" provides lots of flexibility, and each reservoir manager can define it as needed to fit his/her specific situation.

**Brown:** Since this isn't a regulatory directive, leaving the definition of sustainability open may be ok.

**Carpenter:** Can you provide more context on the portion of the resolution that deals with costs? **Answer:** It was intended just to highlight the fact that there are costs associated with dam decommissioning, and those costs are enormous. **Carpenter:** Recommend either removing the sentence entirely or change it to say that the cost of implementing these plans will be large and there will need to be a determination of who will pay those costs.

**ACTION:** Send proposed language changes to Meg Jonas, and she will take them back to the committee. Then ACWI can vote on the revised resolution via email in the near future. The subcommittee can decide which edits to use in this resolution and which ones to cover in additional resolutions. [Status: COMPLETE]

## **Report from the Sustainable Water Resources Roundtable – John Wells, Minnesota Environmental Quality Board**

John Wells gave a presentation on activities of the Sustainable Water Resources Roundtable (SWRR), a national collaboration of Federal, State, corporate, non-profit, and academic interests. SWRR's mission is to promote sustainability of the Nation's resources through evaluation of information, development and use of indicators, targeted research, and engagement of people and partners. The SWRR has over 1000 participants from Federal, State and local governments; corporations; nonprofits, and the academic community. The roundtable is active with meetings being held in California, Colorado, Florida, Maryland, Michigan, Minnesota, New Hampshire, Virginia, and the District of Columbia. John commented that it is important to keep pace with changes – population growth and movement, shift to permanent crops, increased flood risks, declining Delta and watersheds, impaired water bodies, impacts of climate change on water systems, aging water and flood systems challenged by regulatory protections and legal remedies, and the growing economic and societal consequences of declining water reliability and degraded quality of surface and groundwater supplies. The SWRR provides a forum that allows open conversation on relevant issues. John mentioned The Alliance for Water Stewardship's International Water Stewardship Standard which is in the beta testing stage. Its aim is to support water users in taking appropriate actions to evaluate and improve their impacts on watersheds. John also discussed the California Water Plan (a blueprint for integrated water management and sustainability), water sustainability in Florida, and sustainability issues in New Hampshire where the SWRR participated in the New Hampshire Water and Watershed Conference in March 2014.

Next steps for the SWRR are to continue Roundtable research through building regional connections and adding new partners. The SWRR will also assist agencies in developing and describing the need for monitoring and management programs.

## **Report from the Interstate Council on Water Policy (ICWP) – Sue Lowry and Peter Evans**

Sue Lowry provided ICWP comments to ACWI. She noted that the ICWP appreciates Assistant Secretary Castle's request for recommendations and encourages more engagement of ACWI members through more frequent web meetings. Sue briefly addressed areas where non-Feds can become more involved such as:

- Bulletin 17C development and review
- Extreme events review
- OWDI – modelers, database managers, GIS/geo-database experts
- Uncertainty and risk analysis – Water Census applications and shrinking budget recommendation number four
- Monitoring network gap analysis

**Hunsicker:** I support the idea of having webinars leading up to our face-to-face meeting, to help us prepare for the meeting and digest the information, so we can focus our face-to-face time on discussion.

**Pathak:** We don't have a lot of interest in monitoring from the research end (National Science Foundation and others aren't interested). We don't need to continue monitoring frequently at sites where flow conditions don't change much; so you can devote more resources to monitoring in locations where flow conditions **do** change.

### **Round-table updates from members – Part 1**

[Each member organization was given a couple of minutes to update the group on their organization's activities.]

**David Langseth, National Ground Water Association (NGWA):** No comments.

**Bob Goldstein, Electric Power Research Institute (EPRI):** Bob commented that he has tremendous respect for USGS science and staff. It seems that every 3-4 years, DOI has a major water initiative with a lot of fanfare and web presence, and then they disappear, and we don't know what happened to them. What happened to the Water Census? **Werkheiser:** It's still active, and though it hasn't grown as quickly as we would have liked, we're continuing

the work as we're able. There are studies occurring in three focus areas (Delaware Basin, Colorado Basin, and Apalachicola-Chattahoochee-Flint Basin). They're also looking at better ways to estimate water use techniques, and trying to quantify uncertainty for flow estimates at ungaged sites. **Question:** When will we see a national census? **Answer:** It's not a single product, but many interim products. We release information on a 5-year basis, with consumption as well as withdrawal. The next one will probably be released in 2015. The 2015 budget request is intended to shorten the period between study releases.

**Dave Wunsch, Association of American State Geologists (AASG):** Background on State Geological Surveys. Involved in hydraulic fracturing work.

**Charlie Hunsicker, National Association of County Planners (NACP):** All politics is local, and all water decisions end up having local impacts (land use, cultural, consumption, etc.). There are issues of common concern to those of us who have to live with the decisions that broad, sweeping Federal policies make. We are vulnerable and sensitive to the impacts of loss of streamgages as Federal and State governments are. We lost a lot of streamgages in the last few years, and we really need to reinstate them; the water quality data that's attached to the flow data is also very important, especially for those of us who are responsible for NPDES permitting, etc. With climate change, we can no longer reliably predict large storms, and that's a problem for those of us in coastal communities.

**Elin Betanzo, Northeast-Midwest Institute:** Elin gave background on the NEMWI mission and projects. Elin is currently working on groundwater studies: nutrient enrichment and the availability of water quality data to help influence policy questions. They're expecting to have those case study reports done by the end of this calendar year, and the products should help explain the value of water quality data.

**Martha Juch, American Society of Civil Engineers (ASCE):** Background on ASCE organization and mission. They have 8 technical institutes, including the Water & Environmental Resource Institute. Martha will take news about ACWI back to those Institutes to let them know what ACWI is doing and how it relates to ASCE activities and concerns. ASCE key water issues are related to infrastructure (transportation, dam safety) and initiatives related to energy. ASCE hosted a flood summit to look at efforts after Katrina. She would like to see ACWI concentrate on a flood-related issue instead of just collecting the data. It would be nice to see FEMA represented on the main ACWI. ASCE would like to know what we can do to help ACWI – to ensure ASCE policies support ACWI.

**Don Cline, NOAA – National Weather Service (NWS):** Our River Forecast Centers are a core of our activity. They underwent a modernization in the early 1990s, but hydrology wasn't part of that. Now NWS is doing a large-scale restructuring of its programs and organization. Water has been a high visibility area at NWS for a long time, but we're just now seeing some big changes in our water activities. Staffing up a new Water Center (reference [www.nws.noaa.gov/oh/nwc/](http://www.nws.noaa.gov/oh/nwc/)) in Tuscaloosa, Alabama, that mirrors what happens on the meteorological side of NWS – having smaller centers around the country, and also having a larger national center to do things the smaller ones can't do. We'll be developing a centralized forecasting capability for this new center, and we've been in close collaboration with USGS and the Corps of Engineers in the process. We also have a chance to bring groundwater into an operation-prediction arena. This will provide the opportunity to incorporate the use of new portals.

**Mike Shapiro, EPA:** We benefit from the EPA Office of Research and Development's work: monitoring technologies, modeling, water treatment technologies, etc. A lot of what we do at EPA relies on data provided by USGS, COE, and other agencies. Nancy Stoner recently left EPA, so we have new leadership (Cameron Davis) nominated for the Office of Water. Right now, most attention is on the "waters of the U.S. proposed rule" which would create new regulatory definitions regarding which waters are subject to EPA jurisdiction (this would affect dredging rules, NPDES permitting, and other areas). Nutrient pollution also is a principle focus of our water quality efforts; we're working with USDA and the States to implement a series of actions across the country to strengthen our work in this area, especially now that toxic algal blooms are causing more frequent health risks in parts of the Nation. We are heavily investing in revising our information infrastructure to make our information more accessible to the public. Also, EPA has been spending a lot of time thinking about what climate change means for our water resources. We're working with NOAA and USGS to translate some of the existing data and tools into new

forms that can be used to support municipal planners' efforts and water-quality planners across the country. Clean Water State Revolving Fund.

**Chandra Pathak, U.S. Army Corps of Engineers (COE):** We have threat risk reduction initiatives and ecosystem restoration initiatives. We deal with dams and levees, and we use streamgaging data to manage operation of these structures. During sequestration we had to look closely at which streamgaging locations were most critical to sustain during the funding reductions. Without having the data for design purposes, we will be either over-sizing or under-sizing the design of our water supply and flood control structures. We can pay for good data now, or we can pay later when we realize our structures were poorly designed because of not having sufficient data. We also use forecast data on a regular basis, though it's risky to base management decisions about reservoir withdrawals and other issues on the basis on predictions that may or may not come true. We are using science to ensure we are doing what we need to do. Data is critical to our efforts.

**Paul Freedman, WEF:** Background on WEF (large professional association including regulators, planners, etc.). Paul commented that he is also affiliated with LimnoTech. Certification for corporations that have good water stewardship practices. OWDI initiative – if you want to do a little inquiry, take a look at the Great Lakes Observing System and Integrated Ocean Observing Systems (IOOS). The issue of nutrients and algal blooms is an issue that ACWI may want to investigate to see if we have sufficient data. Something that hasn't come up during this meeting is evaporation; in some senses we "lose more from the top than we do from the bottom." With large changes in lake levels (i.e., Lake Mead), we need to pay attention to evaporative losses, in addition to sedimentation and flow loss.

**Harry Zhang, American Water Resources Association (AWRA):** Water education, management, and research. This is the 50-year anniversary of AWRA, and we're planning a conference in November in Tysons Corner, VA, and we encourage all of you to attend.

**Dave Curtis, National Hydrologic Warning Council (NHWC):** Education and training (flash floods, drought, tsunami warning) for the hydrologic warning community. A lot of our focus is on real-time events and data transmission standards. Lots of local flood warning system operators belong to NHWC. We're redesigning several networks around the country with new protocols. A lot of growth in social media technology has affected our work; these are critical platforms for getting information out to the public. Inundation mapping is going to be seen on television soon as often as Doppler radar images are seen, as new technology becomes available for that area too.

#### **Update from National Water Quality Monitoring Council – Gary Rowe, USGS**

Report on the 2014 National Monitoring Conferences

- Update from the Water Information Strategies workgroup
- Communication and Outreach workgroup activities
- National Network of Water Quality Reference Sites
- USGS/EPA Water Quality Portal
- National Monitoring Network / Coastal Water Quality
- Methods and Data Comparability Board / National Environmental Methods Index / Sensors

Gary Rowe opened his presentation with an overview of the Council's history. Between 1992 and 1997, the Intergovernmental Task Force on Monitoring (ITFM) evaluated the status of the Nation's monitoring programs and recommended that the Council be formed. The Council was officially approved by ACWI in 1997 and provides a national forum to improve the Nation's water quality through collaborative partnerships that foster increased understanding of our water resources. Membership is comprised of Federal agencies, States and Tribes, professional organizations, interstate organizations, and academia (reference [acwi.gov/monitoring/members.html](http://acwi.gov/monitoring/members.html)). The Council is comprised of seven teams/workgroups – water quality portal team, methods and data comparability board, aquatic sensor workgroup, water information strategies workgroup,

national network of reference water sheds, national monitoring network, and the collaboration and outreach workgroup.

Gary referenced the many products of the Council including the biennial National Monitoring Conference, Water Quality Portal, National Environmental Methods Index, national network of reference watersheds, the National Monitoring Network (pilot studies). Additional products include the Council newsletter, webinars on monitoring topics, fact sheets, technical reports, and white papers on monitoring issues.

An overview of recent activities –

- *9<sup>th</sup> National Monitoring Conference* – Held in Cincinnati, Ohio, the conference was very successful with around 650 attendees, 280 talks, 80 posters, 27 workshops/panel sessions, demos of the Water Quality Portal, NEMI, NRW, and EPA/USGS products. There were 30 exhibitors and 38 exhibit booths. Hot topics from the conference included continuous monitoring, results of EPA-States national aquatic surveys (including the national coastal assessment), volunteer monitoring, nutrients, training on data portals, trend analysis, and statistical packages, effective communication of science to managers and the public, effects of climate/extreme hydrologic events on water quality, and new/emerging contaminants. Lessons learned were compiled based on post conference survey results. The leading contender for the 10<sup>th</sup> National Monitoring Conference is Tampa Bay, Florida. Alternate sites being considered are Providence, Rhode Island, and Portland, Maine.
- *Water Quality Portal (WQP)* – A standalone web service that allows users to easily download USGS, USEPA, and USDA water-quality data from a single website. The WQP retrieves water-quality data from over 400 local, State and Federal databases. Climatic, hydrologic, and water-use data are not included. Statistics show that there have been 1.4 billion automated data retrievals.
  - Someone asked earlier why we don't include assessments in the portal. **Answer:** The task of getting just the raw data and metadata and putting it all into a common format is huge, so adding assessments isn't something we will be able to do in the short term.
- *Methods and Data Comparability Board (MB)* – Gary gave an overview of the MB and talked about progress. The MB develops water-quality monitoring approaches that facilitate collaboration and data comparability across all data-gathering organizations. The MB also develops products that enhance our ability to make the best of our limited resources for water-quality monitoring. These products include NEMI, minimum water-quality data element checklists for water-quality monitoring, and tools to develop comparable data quality objectives (DQOs) and measurement quality objectives (MQOs). Accomplishments include:
  - NEMI's 12<sup>th</sup> year marked by release of NEMI 4.0 (1200 monitoring methods)
  - NEMI methods linked to data in WQP (526 methods associated with WQP data)
  - Developed a protocol library to provide access to field protocols and related methods

Plans –

- Finish crosswalk linking NEMI methods to data in WQ portal
- Add additional field collection methods to the protocol library
- *Aquatic Sensors workgroup* – Works to address the challenges of using water-quality sensors with the goals to develop SOPs for calibration, QA/QC, maintenance, and deployment of field sensors; creating a database to store info on sensors that will help users decide which sensors are best suited to their projects; recommend sensors types appropriate for freshwater, estuarine, and coastal environments. Progress:
  - Developed continuous monitoring technical sessions at the Cincinnati meeting
  - Sponsored workshop examining issues associated with “mega” datasets

- [watersensors.org](http://watersensors.org) -- disseminate information on emerging sensors

Plans –

- Develop improved guidance on how to incorporate continuous sensor data into existing monitoring programs
  - Develop examples of continuous sensor applications
  - Develop guidelines for interpretation of large, time-dense datasets
- Participate in EPA nitrate sensor challenge
  - Develop a white paper on the state of the science
  - Attend September workshop
- *Water Information Strategies (WIS)* – The WIS defines and promotes strategies for monitoring designs, data management, access and exchange, data integration and analysis, and information reporting and provides technical support to other workgroups. Recent products include:
  - NEMI statistical methods
  - Survey of water-quality indices/report cards
  - "What your manager needs to know" fact sheet series - aims to explain the value of different types of monitoring approaches, and the value of water-quality data, in terms that non-technical people can understand.
  - "Lessons Learned" when monitoring extreme hydrologic events technical session

Plans –

- "What your manager needs to know" Fact Sheet series - Topics being considered include probabilistic versus targeted monitoring designs, fixed-site trends monitoring, program effectiveness, evaluating uncertainty in water-quality data
- *National Network of Reference Watersheds (NNRW)*— Gary gave an overview of the NNRW, discussing the goals of the group to:
  - Provide access to data and information of known quality from minimally or least disturbed watersheds to be used in assisting with establishing "background" conditions for select hydrologic variables and water-quality
  - Increase the efficiency of monitoring with improved coordination and collaboration and increased opportunities to leverage existing reference sites, network, and financial resources

Progress –

- Developed site metadata database
- Created interactive map for NNRW website
- Developed plan for linking NNRW site information to the WQP
- Started developing criteria for defining different types of reference watersheds including:
  - Natural watersheds "best of the best" (504 sites defined by agreed upon criteria)
  - Least disturbed urban watersheds
  - Least disturbed agricultural watersheds

Workgroup Plans –

- Refine NNRW website and connect to WQP
- Identify additional data available for NNRW sites (biology, atmospheric deposition)
- Develop workflow for incorporating additional sites and add identified sites
- Associate NNRW core watersheds with National Atmospheric Deposition Program deposition stations
- Write a report/paper describing the network

- *National Monitoring Network (NMN)* – The NMN is a network of networks intended to integrate biological, chemical, and physical monitoring programs from headwaters to coastal estuaries. Gary gave an overview of the NMN and noted its strong linkage to NOAA and regional groups such as the IOOS. Implementation efforts are focused on several pilot studies conducted across the country.
  - 2007-2011 pilots – Lake Michigan, Delaware Bay, and SF Bay
  - 2011-2015 pilots – Albemarle Sound and Puget Sound
  - Outcomes of the pilots
    - Improved estimates of land-based inputs of sediment, nutrients, and contaminants to pilot area estuaries
    - New data on sources, amounts, timing, and severity of natural and human stressors
    - Application of new monitoring technology including
      - Real-time monitoring with continuous sensors
      - WQ surveys using autonomous underwater vehicles (AUVs)
      - Characterization of suspended sediment contaminant loads and algal toxins in estuaries
      - Collaborative agreements for new or enhanced water-quality monitoring in the pilot watersheds

Plans are to complete the Albemarle and Puget Sound pilots and consult with the Council on future directions.

- *Collaboration and Outreach Workgroup (C&O)* – The C&O works to build partnerships that foster collaboration and communication within the water-quality monitoring community. The C&O supports State and regional water quality monitoring councils (there are approximately 20 active councils). Additionally, the C&O coordinates with the volunteer monitoring community including the Volmon newsletter. The group is responsible for sharing publications (newsletter), meetings (recorded WebEx), and web seminars.

Gary wrapped up his presentation noting that the Council is involved with lots of activities – are we doing too much? Is it better to do a few things well, rather than trying to do too many things? Challenges we face include – the need to balance the NMC effort against all the other efforts because it's consuming a huge amount of our time and effort, upgrading the WQP – basic upgrades versus “bells and whistles,” tackling continuous sensor data – council role as consensus builder for protocols, QA/QC practices, data storage and handling, and applications, and communicating the value of QW monitoring and data to water managers and the public.

**Goldstein:** If there's a national issue, should you send out a national release that lets people know that you have information that relates to today's hot issue. **Answer:** We try to do that through our webinar series, where we keep it current and topical.

## Round-table updates from members – Part 2

**Joe Lee, Ground Water Protection Council (GWPC):** We work with State regulatory agencies to promote protection and conservation of all water resources for beneficial uses, with emphasis on groundwater systems. Our flagship accomplishment has been our Groundwater Report to the Nation. Next week we'll be pushing the State Oil and Gas Rules designed to protect water resources; this is an update of a 2009 report (States have adjusted their practices in response to new regulations). Annual Forum will be held Oct 5-8 in Seattle, Washington; the meeting will be focused on "Groundwater Sustainability: A Critical Component of the Ecosystem."

**Alan Vicory, Stantec:** Stantec ([stantec.com](http://stantec.com)) is a large firm with offices all over the world (architecture, energy, power, water). Some of the groups I interact with may be good groups to put in contact with ACWI: Ohio River Basin Alliance; Confluence, and similar organizations in other parts of the country; Midwest Biodiversity Institute; International Water Association, and Basins of the Future. I've heard lots of the issues that concern these groups

being discussed here at the ACWI meeting, and it's exciting to hear what the ACWI subcommittees are doing because I've seen some real possibilities for moving forward.

**Brandon Kernen, Association of State Drinking Water Administrators (ASDWA):** Forum for various State agencies that administer drinking water programs to come together to discuss what approaches work; they also provide advice to elected officials and to EPA. In the last few years emerging contaminants and climate change have been big issues. We're also looking at what State drinking water programs need in order to comply with regulations. Annual conference is Oct 30 in Albuquerque.

**Dave Langseth, NGWA:** The world's largest association of groundwater professionals (scientists and engineers, equipment supply, drilling). Key activities are two regular national conferences and numerous specialty meetings (upcoming workshop on research and monitoring methods for looking at potential shallow groundwater impacts from unconventional oil and gas exploration). NGWA's main emphasis in ACWI has been in SOGW. Water well construction manual was recently produced, and we're working on a similar document related aquifer storage and recovery.

**Jim Pletl, National Association of Clean Water Agencies (NACWA):** NACWA is active on the regulatory and legislative sides of the house in the water community. Wastewater treatment, storm water control, Utility of the Future effort with WEF (one aspect of this is resource recovery – recovering energy and water from our processes and systems so that those resources can be recycled). Water reuse is a major effort for NACWA, and we're very interested in concepts like aquifer recharge. We're hoping that USGS and ACWI can work together to figure out a way to preserve the aquifers that are being drawn down at an unsustainable rate.

**Sue Lowry, ICWP:** Membership in ICWP is open to States, interstate organizations, compact commissions such as ORSANCO and the Delaware RBC, regional authorities, and Tribes. There is also an associate membership for groups like YSI and Hach. Focus is on a couple of areas: streamgaging efforts (funding request letters); water planning agency coordination among States. There is one annual meeting (Charleston, SC, September 23-25) and one meeting in Washington, D.C., in the spring. Peter Evans is going to retire soon, so the Executive Director position is open to applicants.

**Tony Willardson, WSWC (via phone):**

Background on the Council. Represents 18 western States. Current activities include: WESTFAST activities; trying to connect States; water availability and energy development, through Western Governors Association. We've been very active with USGS and NASA on Landsat. Hydrologic workshop in San Diego. Water transfers are a concern to us. Infrastructure is important to us.

**Bill Brown, ASFPM:** Thirty-one chapters. Activities include engineering, mapping, planning, flood insurance, forecasting, and many others. We try to protect natural beneficial functions of floodplains and to do so without causing adverse effects. Coordinate with many Federal and State agencies, often in an advisory capacity. National Flood Insurance Reform Act caused many changes, starting with Homeowners Flood Insurance Affordability Act. Right now we're updating some policy documents with over 180 new recommendations. Technical Mapping Advisory Council has been reformed in response to the new legislation and is holding about 6 meetings a year.

**Steve Heiskary, North American Lake Management Society (NALMS):** We're a smaller organization, but we have a very broad membership (State, Federal, university, volunteer monitoring community). Participation in ACWI gives me a chance to make a lot of connections and get information to answer questions that our members have. ACWI is a ready source for information. I would like to encourage EPA and COE to try to increase work in harmful algal blooms, especially regarding human health impacts. NALMS serves ACWI directly by their support for the National Monitoring Conference. The Journal of Lake and Reservoir Management is a good resource that I encourage you to look at and to consider as a source for publishing your science results. NALMS has also been active in the ACWI Climate Change workgroup. Upcoming symposium is Nov 12-14 in Tampa, Florida; typically draws attendees from all over North America and Asia.

**Greg Prelewicz, American Water Works Association (AWWA):** AWWA dates to the 1880s and has a broad membership of about 50,000. It is the largest nonprofit, scientific and educational association dedicated to managing and treating water. Products include conferences, standards (drinking water), legislation and regulation (Safe Drinking Water Act). Current activities of interest: in the early stages of working with a water research foundation and some larger utilities on developing a methodology for water utilities to examine their watersheds for upstream issues that could impact source water, particularly in case of a spill (a lot of similarities to the Water Quality Portal); Water Utility Climate Alliance case studies using decision support planning methods in the use of climate information for long-term planning.

**Public Comment Period**

No public comments were offered.

**Adjourn**

**Attendees:**

<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>
Alcalde	Sharon	U.S. Geological Survey
Bales	Jerad	U.S. Geological Survey
Berry	David	ACWI - SWRR
Betanzo	Elin	Northeast-Midwest Institute
Brown	Bill	Association of State Floodplain Managers
Brown	Erica	Assoc. of Metropolitan Water Agencies
Carpenter	Adam	American Water Works Association
Castle	Anne	Department of the Interior
Cline	Don	National Oceanic and Atmospheric Admin.
Cunningham	Bill	U.S. Geological Survey
Curtis	David	National Hydrologic Warning Council
Dabolt	Tod	U.S. Environmental Protection Agency
Dalton	James	U.S. Army Corps of Engineers
Dye	Steve	Water Environment Federation
Evans	Peter	Interstate Council on Water Policy
Freedman	Paul	Water Environment Federation
Goldstein	Elana	U.S. Environmental Protection Agency
Goldstein	Robert	Electric Power Research Institute
Heiskary	Steven	North American Lake Management Society
Hom	Victor	Subcommittee on Hydrology
Hunsicker	Charlie	National Association of County Planners
Jonas	Meg	U.S. Army Corps of Engineers
Juch	Martha	American Society of Civil Engineers
Kernen	Brandon	Assoc. of State Drinking Water Administrators
Kovatch	Charles	U.S. Environmental Protection Agency
Langseth	David	National Ground Water Association
Lewis	Carol	U.S. Geological Survey
Lowry	Sue	Interstate Council on Water Policy
Lucido	Jessica	U.S. Geological Survey
Mannion	Brenna	National Assoc. of Clean Water Agencies
Martz	Kim	U.S. Geological Survey
Mason	Deirdre	Assoc. of State Drinking Water Administrators
Mason	Robert	U.S. Geological Survey
Michelsen	Ari	Universities Council on Water Resources
Mickle	Chris	Cardno
Moulton	Steve	U.S. Geological Survey
Muse	Mike	U.S. Environmental Protection Agency
Musick	Mary	Ground Water Protection Council
Myers	Donna	U.S. Geological Survey
Nicholson	Thomas	Subcommittee on Hydrology
Norris	Mike	U.S. Geological Survey
Norton	Wendy	U.S. Geological Survey
Pathak	Chandra	U.S. Army Corps of Engineers
Pletl	James	National Assoc. of Clean Water Agencies

<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>
Prelewicz	Gregory	American Water Works Association
Reimer	Christine	National Ground Water Association
Rowe Jr	Gary	National Water Quality Monitoring Council
Schreiber	Robert	American Society of Civil Engineers
Sell	Nathan	U.S. Environmental Protection Agency
Shaffer	Ken	U.S. Geological Survey
Shapiro	Mike	U.S. Environmental Protection Agency
Skopec	Mary	Iowa Department of Natural Resources
Smith	Tim	U.S. Geological Survey (ret.)
Solis	Ruben	Texas Water Development Board
Thomas	Wilbert (Will)	ACWI - Subcommittee on Hydrology
Touton	Camille	Department of the Interior
Vicory	Alan	Stantec Consulting
Wells	John	American Water Resources Association
Werkheiser	William	U.S. Geological Survey
Wunsch	David	Association of American State Geologists
Zhang	Harry	American Water Resources Association