

Monitoring Challenges Teleconference 9 Nov 2012

Attendees:

Bill Werkheiser	John Jansen	Robert Mason
Brandon Kernen	Marie Garsjo	Sheri Alcalde
Dan Sullivan	Mike Norris	Sue Lowry
David Wunsch	Mike Yurewicz	Terry Cheek
Doug McLaughlin	Peter Evans	Wendy Norton
Earl Greene	Pixie Hamilton	
John Gray	Robert Goldstein	

Teleconference: The call-in number is 1-855-547-8255 (toll free); Access code: 60862

Agenda:

- Roll call and introductory remarks (Bill Werkheiser and Peter Evans)
- Briefing by Mike Norris and Robert Mason on the USGS National Streamflow Information Program (NSIP)
- Question and answer and general discussion
- Review of next steps and scheduling future meetings (we have a proposal to meet regularly every 2 weeks, which might make scheduling easier for everybody)

Action Items:

- *ALL* – Let Wendy Norton know if you're interested in being a co-chair.
- *Norton* – Notify Jeff Deacon that he may want to call in for some of these sessions.
- *ALL* – If there are additional questions, contact *Wendy Norton*.
- *Norton* – Send a Doodle poll to set up next call. Monday Nov 26 might be a good time for the next call, either morning or early afternoon? (Maybe concentrate on groundwater, unless *Hamilton* is available to address Coop Program issues.)

Werkheiser – Any questions about the final charge from Anne Castle? *Evans* – I'm glad we have this to give us the scope of the request; it's a pretty broad charge. As you mentioned, we want to get this effort done in June so we can be ready for the July 2013 ACWI meeting. *Werkheiser* – The charge from Anne emphasizes that the report resulting from this effort should be independent, even though USGS input will be necessary; thus, I have asked Peter Evans to lead this work group. There will probably be a co-chair or multiple co-chairs needed, if we're going to finish our work on time.

ACTION (ALL) – let Wendy Norton know if you're interested in being a co-chair.

Any thoughts on process for getting this done? *Evans* – Scheduling regular meetings works well to keep people focused and following up. Meeting every other week might be a good place to start, even if we don't plan to keep meeting that often all the way until June.

Werkheiser – Is every other week reasonable? *Wunsch* – It sounds reasonable, but we need to make sure that it doesn't conflict with other ACWI subgroup calls (i.e., SOGW). *McLaughlin* – Yes, it's a good idea to go ahead and put it on the schedule so people can plan ahead.

We probably want to start with the monitoring programs, then also take a look at other related programs (water census, NWIS, Cooperative Water Program, NAWQA, GWRP, NADP, Benchmark, NASQAN, Landsat?). Nov 21, 26, or 28 is the WESTFAST conversation (*Norton* will talk with *Hamilton* about this).

Hamilton – We should also touch base with what Jeff Deacon is doing, analyzing networks that are supported by the States. *Yurewicz* – That's a good suggestion because there are many applications for that dataset, and those applications are very relevant to data-sharing issues, better data utilization, etc.

ACTION – *Norton* – Notify Jeff Deacon that he may want to call in for some of these sessions.

Briefing from *Mike Norris* and *Robert Mason* on NSIP and the streamgaging network:

Background – USGS streamgaging network is partner-funded network (partners include NSIP, Coop, and over 800 other agencies). All the streamgages operated by USGS fall under the NSIP umbrella. When fully funded, NSIP would fund about 4600 gages that meet Federal needs.

Questions –

What elements of the monitoring program do you see as critical? What elements do you need to protect?

- The quality of the data that we produce. We want to always produce unbiased, nationally consistent data that is free to everyone who wants to use it. We want to make sure we maintain our partnerships that help to keep the program relevant; their input is extremely valuable to the program.
- We can't give up one monitoring program for another – they are not interchangeable. We need to make sure we have a holistic water monitoring program.
- The streamgaging network is very complex. Every gage is located where it is for very specific reasons; the reasons may have changed over time, but they are located where they are because there is a need to have streamflow information at each of those specific locations.

Wunsch – Can you define “Federal needs”? Not all of the Federal needs gages are on Federal lands.

- Federal lands and Federal projects does not equal Federal needs. The “Federal needs” as we have defined them are: (1) interstate and international boundaries or interstate compacts and decrees; (2) streamflow forecasts for National Weather Service forecast locations; (3) river basin outflow (accounting of the Nation's water); (4) sentinel watersheds (help to determine the effects of climate change and land use change); (5) support for water-quality monitoring.

What are the drivers of your monitoring program? Which of these drivers can be used to get more partners in private industry (hydraulic fracturing, for example, might be a driver that would encourage energy companies to partner with us in groundwater monitoring)?

- The drivers are the users: over 850 Federal, State, local, and Tribal agencies that help to drive this program. They are the local people who live near the streamgages.
- Regulators are also drivers (FERC licensing, for example) because they can require that people use USGS streamgaging data.
- State roundtables also are a driver.
- The critical Federal needs enumerated above are also drivers, from the USGS perspective.
- Some commercial organizations have asked to help support streamgages (WalMart, rafting companies). In return for their support, we allow them to put their corporate logo on the web page that shows data for the supported gage.
- *Hamilton* – Mike is talking about USGS streamgaging, and that is broader than NSIP; I want to make sure people understand the difference. NSIP is designed specifically to meet Federal needs, using 4600 streamgages (not all of these streamgages are active; only about 500 are fully funded by NSIP, with about 900 more partially funded by NSIP). The full streamgaging network is actually about 8000 gages; this brings in other State, local, and regional funding partners, along with all their goals. This adds a whole new layer of complexity to the network.
- Most of the funding now is coming from partners – notably from State and local agencies.

What's happening with the groundwater monitoring component of the National Water-Quality Assessment (NAWQA) Program?

- *Werkheiser* – The 2013 President's Budget included funding for this. Under the Continuing Resolution we don't have funds to start this, but we're taking a look at the situation to see what we CAN do.

The question of data confidence is one that the *ad hoc* Water Census design workgroup struggled with. Is it possible to estimate the level of confidence we might have today if the National Streamflow Information Program (NSIP) had been fully implemented 10 years ago?

- Probably not. It would be a very interesting exercise, but I'm not sure we could do a quantitative analysis of this. What we could do (and to some degree have done) is look at network performance relative to historical trends – do we have gages to meet specific purposes or not? This is more about the relative strength of the network, so it's a more qualitative analysis.
- *McLaughlin* – I'm stuck in the world of trying to design a monitoring program, and looking at it with statistical "lenses" to see how confidence changes with a limited number of stations. So some type of quantitative analysis would help me. *Norris* – There is a link on the NSIP home page that may help you (it's the report to Congress that preceded the NSIP design).

What is the budget situation for the monitoring networks? Who are the various funding contributors, and how are all of the funds (not just partner funds) allocated?

- This question gets messy fast, but NSIP would need \$130 million a year to be fully funded. Funding for the whole program was about \$158 million last year (NSIP contributed about

\$27 million, and so did the Coop Program; OFAs contributed about \$28 million; State and local agencies contributed about \$77 million).

- Allocation of funds: we put some funds into each of the 5 goals for the program, and one of those goals is operation of gages. Last year about \$19.5 million of the \$25 million appropriated to NSIP went to streamgage operations.
- *Evans* – Do NSIP funds go to research? *Answer* – yes, each of NSIP’s 5 goals includes a research component. The 5 goals are (1) streamgaging network operations and maintenance, (2) data collection during floods and droughts, (3) regional and national streamflow assessments, (4) timely data delivery, and (5) investments in methods development and research. One research need is the need to establish confidence intervals for our provisional data that’s on the web. Regional streamflow assessments also need research. Improving streamgaging methodology is another research component of the program (researching new methods and technologies). Some NSIP funds also go the National Research Program to tackle these and other issues (\$950k last year).

What flexibility does USGS have in allocating funds to research studies versus monitoring? Do we have flexibility to make quick, tactical changes in allocations to help protect data collection activities that may be in financial trouble due to withdrawal of partner funding or other factors?

- Yes, NSIP has some flexibility because we could take funds from the program’s research components; however, we can’t make quick tactical changes because once the funds have been allocated, it’s not really possible to get them back.
- *Kernan* – What about at a higher level, like the USGS budget overall? Who makes bureau-wide decisions? *Answer* – That’s at the Director’s level. In the last several years, the networks have been priorities at the Director’s level and have been shielded from cuts, compared to the other USGS programs.
- *Hamilton* – Coop Program supports Coop Program gages and NSIP gages. Our philosophy is to guide our Water Science Centers (WSCs) as strongly as possible to hold on to critical long-term gages, flood forecast gages in densely populated areas, etc. So even though the Coop Program is distributed across 48 WSCs, we have strong guidance to maintain those critical stations at all costs. On paper, when we get Coop reductions, we cut assessments; however, monitoring and assessments cannot be separated very cleanly because they go hand in hand, so when we cut assessments, some monitoring sites (hopefully short-term, study-specific ones) are necessarily lost.

Within your monitoring program, what is the relationship between the USGS national programs and the water science centers? How are decisions made regarding funding allocation and program priorities?

- The relationship is very positive between headquarters and WSCs, in all the programs. We give WSCs broad guidance, and they implement the programs (especially NSIP) and make decisions about where the funds are going to be allocated. This approach keeps partners happy because it allows the WSCs to focus on areas that are of concern to the partners.
- *Evans* – Do the WSCs get money for all 5 of the NSIP program components? *Answer* – No, they mostly get funds for O&M of streamgages, though if they choose they can invest in other components of the program. The funds for the other 4 program components are invested mostly by the Office of Surface Water and National Research Program.

- *Wunsch* – When money gets divided between WSCs, do they get a flat amount per gage, or is the money divided based on the actual costs of the gages in each State? *Answer* – The funds are allocated to the WSCs depending on how many of the Federal needs NSIP gages lie within that State. The exception is Alaska because the cost of streamgaging there is so much higher than anywhere else.

Where can new partnerships be pursued, bearing in mind that USGS already has more than 1,000 funding partners for its water data collection activities?

- A huge percentage of our streamgaging network funding is already coming from partners, so we're not sure what more we can gain the way of partnerships. If we could take the Coop Program back to a 50:50 match, it might be enticing to new partners, but we're not sure there are any more viable partners out there.
- There are WSC directors whose primary mission in life is to recruit partners to participate in our programs. Day in and day out, they are innovating and looking for more opportunities. We have a good relationship with State agencies, generally, as a result. The only opportunity we can see for additional partnerships would be a linkage to some compulsory/regulatory process (FERC, TMDL, etc).

How willing is USGS to accept monitoring done by other entities and use the data in their programs?

- We accept data already from several States and put that data right into our database, provided it meets certain criteria. We still quality assure that data, so the cost-savings isn't huge, but it does help.

If data collected by other entities meet certain standards defined by USGS, would USGS be willing to include the data in NWIS?

- Yes, and we already do this. About 10% of the streamflow information we put on the web annually is "furnished records" supplied by other organizations. When furnished records programs are successful, it's usually because the State organization is required (by regulations) to collect the data. Some of these programs end up not being successful because the data doesn't stand up in court, but others succeed.
- There are some success stories out there, and there are also some failures; this group needs to look into why some succeed and others fail. The criteria we require can be met (CA, VA, CO, OR, others). This is an area where the ACWI workgroup can help us. We need to understand why these programs have succeeded in some States but not in others. The biggest problems the States seem to face when they undertake their own streamgaging programs are quality assurance and data management issues.

Bill Wilber – Data management is a key issue with a big price tag. Once agencies collect the data, they have to grapple with how to push the data out to the people who need it.

Running out of time, the final questions were lumped together:

- How can we use new technologies to improve efficiencies, to cut back on labor/manpower required?

- What kinds of efficiencies have already been implemented? What has been tried, what worked, and what didn't work and why?
- What is USGS doing to streamline its in-office work processes, based on the value-engineering study that was recently done by the Interstate Council on Water Policy?
- What ideas for efficiencies have already occurred to USGS program managers or water science center directors?
- Can we find efficiencies in areas where other organizations are already collecting data? Can those data collection sites be made part of our monitoring network?
- How much does USGS use modeling and surrogate watersheds to predict water quality and quantity in under-monitored or unmonitored areas?

Mason – We have made a number of significant investments in streamgaging technology and records processing. We've done a lot to increase efficiency of field operations, but there's still more to do. Data processing is the other expensive piece of the work. We're about to invest \$3 million in new software to handle all computations for time-series data; this will be a big change in the way we process records and will improve efficiency.

Norris – Can we find efficiencies by looking at the way other organizations collect data? We look pretty closely with other organizations who collect data, and if they were doing something that would save us a lot of money or time, we would know about it and we would be implementing it already.

Norris – As far as monitoring for information to put into our database for the streamgaging program, we do not use modeling or surrogate watersheds. I don't think this will be of much value to us during the next decade.

Norris – Regarding data quality and how much inaccuracy we can tolerate – we can't answer that question; the answer is up to the user because each user can tolerate a unique level of uncertainty/inaccuracy, depending on the use to which they're putting the data.

Evans – We may need to look at engaging your customer base in answering the last point you mentioned.

If there are additional questions, people should contact [Wendy Norton](#).

Monday Nov 26 might be a good time for the next call? (Maybe concentrate on groundwater, unless *Hamilton* is available to address Coop Program issues.) *Norton* will send a Doodle poll, aiming for either morning or early afternoon.