MEETING OF
ADVISORY COMMITTEE ON WATER INFORMATION'S (ACWI'S)
SUBCOMMITTEE ON HYDROLOGY (SOH)

April 22, 2004
National Weather Service Office
Room 14316, 1325 East West Highway, Silver Spring, MD

AGENDA

1. Welcome and Introductions
2. Review and Approval of Agenda
3. Approval of Minutes from January 29, 2004 Meeting
4. Action Items from January 29 Meeting
5. Update on Committee Representation and Membership
6. Follow Up on January 29 Debris Flow and Flood Discussion
7. Consideration of Proposed Resolution on Precipitation Frequency Estimate Updates
8. Follow Up on January 29 AHPS Presentation
9. Hydrologic Frequency Analysis Work Group Update
10. Plans for Joint Federal Interagency Hydrologic Modeling and Sedimentation Conference in 2006
11. Hydrologic Modeling Work Group Update
12. Officers for FY 2004-05
13. Announcements and Business Reports from Attendees
14. Other Business
15. Next Meeting
16. Adjournment

Immediately following the meeting, Bill Merkel will present "NRCS Hydro: ArcView GIS Hydrologic Model Interface"

SUMMARY OF MEETING

PARTICIPATING

Don Woodward, American Forests
Will Thomas, Association of State Floodplain Managers
Martin Becker, Defenders of Property Rights (by phone hookup)

Sam Lin, Federal Energy Regulatory Commission
Joe Krolak, Federal Highway Administration (joseph.krolak@fhwa.dot.gov)
Eugene Stallings, National Hydrologic Warning Council
Bill Merkel, Natural Resources Conservation services (NRCS)
Jon Werner, NRCS
Glenn Austin, National Weather Service (NWS)
Geoff Bonnin, NWS
Tom Donaldson, NWS
Tom Graziano, NWS
Pedro Restrepo, NWS (pedro.restrepo@noaa.gov)
Jeff Harris, US Army Corps of Engineers (by phone hookup)
Don Frevert, US Bureau of Reclamation
Chris Knopp, USDA Forest Service (by phone hookup)
David Wells, US Environmental Protection Agency
Steve Blanchard, US Geological Survey (USGS)
Doug Glysson, USGS

(Note: A total of 19 participated - sixteen in person and three by conference call; email addresses listed above are only for those first time attendees or new addresses for previous attendees)

MEETING HIGHLIGHTS

Don Frevert called the meeting to order at 9:30 a.m.

1. Welcome and Introductions

There were 19 participants representing 13 member organizations (of 17 including the inactive USDA/ARS).

2. Review and Approval of Agenda

The order of original meeting agenda was adjusted and approved as listed above.

3. Approval of Minutes from January 29 Meeting of 2004

The minutes of the January 29, 2004 subcommittee meeting have been posted on the subcommittee's website below as the "Meeting of ACWI's SOH, January 29, 2004." These minutes were approved.

http://water.usgs.gov/wicp/acwi/hydrology/minutes/SOH_Minutes_012904a.htm

4. Action Items from January 29 Meeting of 2004

Action**:** Frevert will continue his effort to invite ARS to rejoin the SOH by attending the future meetings.

5. Update on Committee Representation and Membership

Don Frevert called attention to Sam Lin's latest roster and noted that several member organizations (including FEMA, BLM and the Corps of Engineers) are missing a primary representative.

Action: Don Frevert will follow up with those organizations and get them to designate their primary representative.

Don Frevert noted that his efforts to reactivate ARS as a member organization have categorically failed and also observed that ARS has not been active in the subcommittee for a long time. The option of removing ARS from membership on the subcommittee was discussed and it was agreed that Jon Werner of NRCS would try to contact ARS one more time to see if they would agree to participate. The issue of ARS' membership will be taken up again at the next subcommittee meeting.

Action: Jon Werner will contact ARS to see if they are willing to participate.

The new Primary Representative of Federal Highway Administration (FHWA), Joseph Krolak attended this meeting and received warmly welcoming.

6. Follow Up on January 29 Debris Flow and Flood Discussion

Sam Lin reported that from his viewpoint (but not based on any specific guidance), a debris flow is generally defined as a flowing mixture of water-saturated debris down a slope by gravity, for which the following three understandings seem to be pertinent before any further action by the Committee:

- Distinction between a debris flow and a flood:

  Large flow events including flood, debris flow and mudflow are generally defined differently. For instance, debris flows are coarser but less cohesive than mudflows.

- Analysis of (statistical) correlation between the occurrence of a debris flow and a flood in a given drainage basin that may be used as the basis for predicting a debris flow:

  The potential of debris flows depends on the basin characteristics such as soil properties, ground slope, ground cover, rainfall intensity, surface runoff, etc.

- Frequency analysis of debris flow:

The frequency of the occurrence of debris flow depends on the correlation between debris flow and flood.

Martin Becker commented on this further by e-mail (Martin's e-mail is included as Attachment I)

7. Consideration of Proposed Resolution on Precipitation Frequency Estimate Updates

Don Woodward and Geoff Bonnin drafted right after the SOH October 2, 2003 meeting a resolution for SOH members' comments and responses. Don Woodward contacted Toni Johnson and was advised that SOH should not pass a resolution endorsing this, but could forward such a resolution for ACWI's action. (see Appendix I including the draft resolution and email correspondences).

Martin Becker agreed that there was a need to update the frequency estimates in accordance with federal policy circular A-76.

Geoff Bonnin noted that he has been working the internal process within NOAA and the Department of Commerce to confirm that this work is part of their mission and that NWS has a 50 year precedent of doing this type of work.

It was moved that the subcommittee endorse the updating of TP 40 and Precipitation atlas and also the maintenance of the existing stream gaging program.

The motion was discussed and ultimately tabled.

A second motion was offered to establish two resolutions to be sent to ACWI – one supporting the need for the update of precipitation frequency estimates and a second supporting the maintenance of the existing stream gaging program.

This motion was seconded and unanimously agreed to.

Action: Don Woodward will draft and circulate these resolutions for consideration by the subcommittee within 30 days.

8. Follow Up on January 29 AHPS Presentation

There were no further comments on the "A Community Hydrologic Prediction System" Presentation

9. Hydrologic Frequency Analysis Work Group Update

Will Thomas reported that copies of most of the 43 references in Bulletin 17B have been sent to USGS for scanning. The USGS is actively scanning all their reports and has agreed to scan the Bulletin 17B references for the HFAWG. Steve Blanchard reported that Bill Kirby, USGS, located several of the Bulletin 17B references in the USGS library. Once these references are scanned and in electronic form, they will be place on the work group web site for easy accessibility. Thomas

supplemented that if we go to http://www.fema.gov/fhm/dl_flow.shtm we can get a pdf version of Bulletin 17B by sending an email to pdfarchive@floodmaps.net.

Also, as the session organizer, Thomas disseminated "Call for Papers" for the paper session – "Effects of Wilders on Flood Frequency and Design of Transportation Structures," 2005 Annual Transportation Research Board Meeting, January 2005, Washington, DC.

10. Plans for the Joint Federal Interagency Hydrologic Modeling and Sedimentation Conference in 2006

Doug Glysson reported that plans for the joint 2006 Federal Interagency Hydrologic Modeling and Sedimentation Conference are progressing. Most of the key positions have been filled. Representatives of both the Sedimentation and Hydrology Subcommittees are involved. Paula Makar of the Bureau of Reclamation is the overall chair of operations.

11. Hydrologic Modeling Work Group Update

Don Frevert reported that the primary focus of this work group is the joint 2006 Federal Interagency Hydrologic Modeling and Sedimentation Conference. The conference will be held at the Silver Legacy Hotel in Reno, NV from April 2-6, 2006.

12. Officers for FY 2004-05

Don Frevert noted that he was elected to fill the remainder of Mike Grimm's term as chair of the SOH and that Mike's term expires at the end of September, 2004. Don asked that nominees for a new vice-chair be submitted by June 15 and that those being nominated be copied on this correspondence.

Voting on the vice-chair position should take place at the next subcommittee meeting and when a new vice-chair is elected it will allow Sam Lin to assume the role of subcommittee chair effective in October. Frevert indicated at the meeting he would consider staying on as chair through September, 2005 but only if nobody else is willing to move up to Vice-chair.

13. Announcements and Business Reports from Attendees

FERC

Sam Lin reported that after 9/11, the application of dam security risk assessment technology is crucial to ensuring the integrity of the more than 75,000 dams in the U.S., especially to those having high or significant hazard potentials to their downstream. Those dams could result in the loss of life and/or property in case of their failure. Various dam security risk assessment methodologies have been developed as a tool to assess the vulnerability of dam facilities. As a result of security assessment,

judgments can be made as to the necessary and appropriate actions needed to preempt or respond to threat potentials.

The dam security risk assessment methodologies are based on many of the formal risk-assessment methods using step-by-step security assessment processes. FERC applies the so-called "DAMSVR" methodology for "Dam Assessment Matrix for Security and Vulnerability Risk." Applying this tool can assist users to analyze the vulnerabilities of dams to potential terrorist attacks. It is a practical approach to analyzing security risks at dams based on the benefits derived from those structures.

DAMSVR uses fundamental security concepts, risk management procedures and facility vulnerability analysis in its design to meet the requirements of diverse dam owners. The DAMSVR will provide FERC staff with the means for the reviews of detailed security and vulnerability assessment during their annual operation inspections of dams under FERC's jurisdiction across the nation.

NRCS

Jon Werner reported that NRCS is a customer of the Agricultural Research Service (ARS) for soil erosion, water quality, crop growth models, etc. ARS is coordinating with NRCS to provide these models through a new electronic system serving NRCS nation-wide. ARS will be implementing a new scientific software support center in conjunction with its new offices in Ft. Collins, CO. All NRCS models will eventually be made available through this web-based system where all of NRCS's technical references, procedures, and handbooks are served up.

NWS

Tom Donaldson passed around two documents (see Attachment II.A) for everyone's comments. Those who have comments are to email them to me (see Attachment II.B). Tom Graziano also passed along the information on an upcoming video titled "Waters Fury" that is to be played on the Weather Channel (TWC). This video was produced by TWC with full cooperation of the NWS. The video addresses the dangers of flooding and what the NWS is doing to protect lives and property from those dangers. One of the main points of the video is AHPS (Advanced Hydrologic Prediction Service), a subject which has been reported to the SOH on several occasions in the past year. (The AHPS provides new information and products provided through the infusion of new science and technology. This NWS service improves flood warnings and water resource forecasts to meet diverse and changing customer needs)

EPA

David Wells reported EPA has released a new version its aquatic toxicity model AQUATOX for modeling fresh water ecosystems. It predicts the fate of various pollutants such as nutrients, and organic chemicals and their effects on the ecosystem including fish, invertebrates, and aquatic plants. More information is available at
http://www.epa.gov/waterscience/models/aquatox/

Wells disseminated the fact sheet titled “Aquatox (Release 2): Modeling Environmental Fate and Ecological Effects in Aquatic Ecosystems” and explained accordingly.

USGS

Steve Blanchard provided the following information related to the USGS.

1. The USGS drafted a 2-page status of streamgages in FY2004 document that describes the instability of the gaging network due to the small portion of USGS Federal funds for the gaging network, the continued loss of gages with long periods of record, and the strong potential for loss of gages in FY04 and beyond due to the flat and/or declining USGS budget for streamgages. The 2-page document is attached. (See Attachment III: NSIP Status 2004 3-5-2004.doc)

2. The USGS has asked the National Hydrologic Warning Council to do an independent "costs/benefits" analysis of the streamgaging program similar to the report they did for AHPS. The USGS is hoping for a product by the beginning of 2005 CY.

3. The USGS will be installing a few video cameras in the S. CA burn area where debris flow risk is elevated in order to better document flood/debris flow events at these gages

4. The National Research Council just completed an in depth review and analysis of the NSIP program. In general, the report is very complimentary of NSIP. The USGS has a prepublication copy with the final to be released to the public in June.

5. The USGS did request and received rights to the domain name "Water.Gov". This domain name will be use by the interagency effort to develop a water availability status page and indexes similar to the Drought Monitor page.

American Forest

Don Woodward had no new developments to report.

National Hydrologic Warning Council

Eugene Stallings reported that he has been active on the Hydrology Subcommittee (or Committee depending on the time) off and on since the early 1970’s. Historically, he can not remember such a large turnout at the meetings on a consistent basis. Apparently, the Subcommittee is working on topics of considerable interest to the hydrology community. The future looks very bright for the Subcommittee. Keep up the good work.

Association of State Floodplain Managers (ASFM)

Will Thomas reported that the ASFPM will not participate in the 2004 ACWI Task Force that is reviewing the USGS Cooperative Water Program primarily because ASFPM did not participate in the 1999 Cooperative Task Force. The 2004 Task Force is primarily reviewing the progress of the USGS in implementing recommendations from the 1999 report.

FHWA

Joe Krolak had no new developments to report.

Corps of Engineers – HEC Center

Jeff Harris had no new developments to report.

Bureau of Reclamation

Don Frevert reported that Shannon Cunniff, Reclamation's Director of Research and Natural Resources had left Reclamation at the end of March to accept a position with the Department of Defense in the Washington DC area. For the short term, the position will be filled by an acting director and it might ultimately be converted from an SES position to a non-SES position.

14. Other Business

None.

15. Next Meeting

The SOH next meeting was scheduled for Thursday morning, July 15 at Room 581, Building 67 of the Denver Federal Center. Information on how to get there, shuttles, hotels, etc can be found at:

http://www.usbr.gov/pmts/tech_services/tscwhere.htm

Action: Don Frevert will provide details including the draft agenda and call in information in advance of the meeting. Any member who would like to suggest an afternoon presentation or tour should contact Don as soon as possible.

16. Adjournment

The meeting was adjourned at 12:00 p.m. A brief presentation from NRCS followed the meeting.

*****Presentation Summary on "NRCS Hydro: ArcView GIS Hydrologic Model Interface"*****

Bill Merkel presented the lately developed GIS-based watershed modeling (see Appendix II "Abstract").

Appendix I. Funding NWS for Rainfall Frequency Estimates

I.A: A Resolution Draft from SOH to ACWI (drafted by Don Woodward and Geoff Bonnin in October 2003)

Summary:

Endorsement of national update of precipitation frequency estimates by NOAA/NWS with funding provided by Federal user agencies.

Action:

ACWI approval.

Motion:

Whereas the precipitation frequency estimates published by NOAA's NWS are in urgent need of updating and such activity is reimbursably funded, ACWI strongly recommends:

1. That publication of updated precipitation frequency estimates by the Federal Government is in the national interest.
2. That NOAA's National Weather Service be should be the agency responsible for preparing such estimates beginning in FY04 with publication scheduled for FY08.
3. That Federal agencies who use such estimates or regulate based on such estimates provide necessary funds and report back to ACWI within two months on their commitment to do so.

Follow-Up Action:

Each Federal agency representative should obtain their agency's funding commitment and report back to ACWI by November 15, 2003.

Background:

SOH has discussed this issue and urges ACWI to endorse the proposal.

The rainfall frequency atlases and technical papers published by the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) since the 1950s serve as de-facto national standards for rainfall depth and intensity in the United States. The current standards were published between 1961 and 1973 and are in urgent need of updating.

NWS demonstrated its capability to prepare and publish the estimates by publishing peer reviewed updates for the semiarid southwest in August 2003. NWS expects publication of updated estimates for the Ohio River basin and surrounding states in summer, 2004. NWS has assembled a skilled team and has used improved techniques, significantly longer data records, and new web based publication methods including compatibility with GIS.

A full national update is expected to cost $1M per year for four years with shared contribution from five to six Federal agencies. NWS does not receive funds for this work from its budget and it is not regarded as part of its mission. However NWS has performed the work for over 50 years at the request of and with funding provided by user agencies.

Civil Engineers use probabilistic estimates of rainfall depths and intensities for the design of a wide range of structures from urban storm water drainage systems, and highway bridges, to dams and spillways. More recently their use has extended beyond the realm of civil engineering to include a broad array of environmental management and analysis concerns such as in-stream ecosystems, stream based pollution discharge and flood plain analysis. The NWS estimates are the basis for regulation by many Federal, state and local agencies. The accuracy of the estimates impacts expenditures of billions of dollars each year by all economic sectors.

I.B: Comments from Toni Johnson

From: Toni M Johnson [mailto:tjohnson@usgs.gov]
Sent: Wednesday, April 21, 2004 5:02 PM
To: Donald E. Woodward
Subject: Re: SOH matters - not appropriate

Hello, Don. You are right, this can create a dilemma. Toward the end of last Fiscal Year, the Sustainable Water Resources Roundtable, which is another subgroup under the ACWI, got the support of the Council on Environmental Quality to send high-level letters to agency heads requesting support of the Roundtable (that is, the meetings that the subgroup itself planned to hold). As ACWI Exec Sec, I knew the letters were being drafted and would probably be signed by CEQ and sent out. The problem came because the letters were NOT copied to the ACWI reps of the agencies from whom funds were being solicited. Therefore, we did not know when they had gone out; also the agencies did not know who to contact for background information. Then, when the agencies requested CEQ to provide contacts re the Roundtable, they gave out our names, but again without our having awareness or a copy of the funding letter. So, at least in USGS and DOI, that caused some confusion and upheaval, although all worked out in the end.

This is somewhat different. However, the proper procedure would be the one originally proposed -- for the SOH to consider a resolution, to send to ACWI member organizations for their concurrence. This might have the added benefit of raising awareness among the non-Federal ACWI members of a need, for which they could voluntarily lend their support. However, for the SOH to send out letters to the ACWI member agencies in support of funding one particular agency's product is NOT appropriate. For one thing, an Advisory Committee is not meant to be a fund-raising or a fund managing body. For another, the SOH as a subgroup does NOT have the authority to make a recommendation or take a substantive action without getting approval from ACWI. Remember, the ACWI subgroups do NOT

have independent authority to take action, because they are meant to be performing work for and/or taking actions at the request of (or with the concurrence of) the ACWI under which they operate.

I gather (correct me if I'm wrong) that the TP-40 is a product, NOT of the SOH, but of the NWS. Therefore, it would seem to me that it would be more appropriate for NWS to make the contacts regarding funding. If they are asking the SOH to sanction and/or support their request for funding, they might ask the SOH to prepare some overview/summary and statement of the usefulness and value of the product. Links to the product and perhaps such a generalized statement, could perhaps be placed on the WICP/ACWI and/or SOH web site, with an appropriate link to NWS; and perhaps a carefully crafted email could be sent from SOH to all ACWI member organizations (Fed and non-Fed) to call their attention to a useful product.

I think it would be appropriate to perhaps do some things like that which could raise attention of the product, its value, and potential need. Then if the NWS sent out letters for funding support to the Federal water agencies, that request could be copied to ACWI; and/or they could make reference to the overview/impact statement on the ACWI/SOH web site. But again, SOH does not have the authority to write funding requests to its member Federal agencies.

I'll send this and then also call you. I will not be in the office Thursday-Friday -- but if we can't reach each other this late in the day, and you feel it's important to talk further about this before Monday, you could try me on my cell phone at 703-628-1900. You can leave a message if you don't reach me directly, and I would try to call you back if I can.

Thanks for asking -- this is getting in "deep waters." Toni J.

Toni M. Johnson, Chief
Water Information Coordination Program
Exec Sec, Advisory Committee on Water Information
417 National Center, Reston, VA 20192
tjohnson@usgs.gov
http://water.usgs.gov/wicp/
ph: 703-648-6810 fx: 703-648-5644
tjohnson@usgs.gov

From: "Donald E. Woodward"
To: "Toni Johnson"
Subject: SOH matters
04/21/2004 12:22PM

Toni

SOH has an interesting matter before us. The NWS as part of a on going effort to revised TP-40 precipitation atlas was attempting to encourage federal and other agencies to contribute to the effort. It was suggest that a resolution be sent from the SOH to ACWI. However that has run into some interesting road blocks. It has been decided to have SOH send letters to the possible interested

agencies recommending that they consider possible funding. It should be noted that revision of TP-40 is recognized as a current need. The question is will such a letter present any protocol problems that you are aware of.

I will be at the address below all day for telephone conversations if needed.

Donald E Woodward
Hydraulic Engineer
7718 Keyport Terrace
Derwood MD 20855
301-977-6834
dew7718@erols.com

I.C: Comments from SOH Members

Geoff,

Thanks for your response. However, the intent of citing A-76 is to allow a private contractor to compete with the NWS for the contract; not just be a subcontractor. As long as we do not cite a dollar amount in the proposed resolution until we have further documentation, I am not concerned as to when you provide the documentation.

Thanks,

Martin Becker

Thanks Martin,

We currently contract over 50% of the work and we're currently completing contract negotiations for the additional work should it eventuate. Also, I'm comfortable with providing detailed project plans once we get buy in.

Geoff

All,

I have reviewed the information that has been sent to us regarding the updating of the TP-40 and NOAA Atlas 2 data, and the proposal to address the issue at next Thursday's meeting (4/22/04). Although I support the updating of the data, there remains a question in my mind whether our committee should be supporting funding for particular members of the committee – especially when the task is not a mission of the agency/department and the agency/department does not provide funding for the task. With that said, if we do go forward with the resolution, I propose that the resolution include compliance with OMB Circular A-76 since the NWS will be doing the work on a reimbursable basis. I am providing the link: http://www.whitehouse.gov/omb/circulars/a076/a76_incl_tech_correction.html . Circular A-76 provides that the private sector be allowed to compete for the proposed funding in accord with federal

procurement laws and regulations. Also, without further documentation of the scope of work, etc; I do not believe that we should specify a dollar amount in the proposed resolution.

Thanks,

Martin Becker

3/1/04
Geoff, Don, and Sam,

This is a very worthwhile project, but I suggest not specifying funding from Federal agencies. Reclamation had to discontinue funding for this project (even though it would like to see the work accomplished) because of other higher priority projects. Various state agencies also benefit from this information and have funded this program in the past. State highway departments, dam safety organizations, water resources departments, climatologists, etc. benefit from this program and should be expected to share in the cost. Therefore, I believe the funding sources should either be expanded in the recommendation or left out entirely.

Bob Swain

Will,

Per the first question, based on the statement that I quoted, it seems appropriate to have the request come from the director's office. At least, someone who has budget and program authority for the NWS as an agency.

Per the second question, in my opinion, the public comment vehicle should be the federal register and should include a 90-day comment period (and a resolution process).

Thanks,

Martin Becker

Martin,

We can always count on you for some thoughtful comments. At what level of NWS do you think we need endorsement?

Eventually the motion will be submitted to ACWI. The ACWI is made up of many diverse organizations, public and private, so endorsement by ACWI does essentially include public comment. Perhaps we do not need a provision for formal public comment.

Will Thomas

"martin becker" <martin_becker@prodigy.net> 03/01/2004 1:07:09 PM

To All,

Due to the statement, "NWS does not receive funds for this work from its budget and it is not regarded as part of its mission.", I think the SOH needs a formal request and an endorsement of the project from the NWS before we adopt a resolution. Also, I think that our resolution should include a provision for formal public comment (and resolution) of the final draft as part of the process.

Thanks,

Martin Becker

(To All,)
I would like to ask each of you to look over the attached draft recommendation from Geoff Bonnin and Don Woodward. I propose that we discuss this and vote on it at our April 22nd subcommittee meeting in Silver Spring. Don Frevert

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Appendix II - "NRCS Hydro: ArcView GIS Hydrologic Model Interface": "Abstract" by William Merkel [1] and Su Liu [2]

The NRCS Hydro system will develop input for the Natural Resources Conservation Service (NRCS) WinTR-20 hydrologic model from GIS data. Required GIS layers which need to be developed by the user for import to the interface include Digital Elevation Model (DEM), soil data (general or detailed), and land use. The user may also import any other layers which would be useful in identifying locations, roads, streams, etc. Some of these optional layers include Digital Ortho Quads (DOQ), Digital Raster Graphs (DRG), Digital Line Graphs (DLG), TIGER data, Hydrologic Unit Code (HUC) maps, National Hydrographic Dataset (NHD), etc. These data are available for much of the United States through the NRCS Geospatial Data Gateway.

The WinTR-20 computer program is used in NRCS to estimate peak discharge and runoff volume from watersheds for use in designing water control structures and in determining impacts of changing land use on the hydrologic system. Further refining or use of advanced WinTR-20 options may then be accomplished through the use of the WinTR-20 Controller/Editor. NRCS Hydro and WinTR-20 systems have comprehensive user guides, training material, example data, and other technical documentation.

NRCS Hydro is based upon the ArcView GIS program from ESRI (Environmental Systems Research Institute). The following software requirements are necessary to operate NRCS Hydro: ArcView GIS Version 3.2 or 3.3, ArcView Spatial Analyst Extension version 1.1 or greater, NRCS Hydro ArcView project and databases. Even though the system is point-and-click, basic familiarity with GIS operations and hydrologic analysis are recommended.

NRCS Hydro is organized to automate the process used in a typical watershed hydrologic analysis. Its functionality is grouped into a series of menus, buttons, and tools which are designed to be used in a

sequential manner. In conducting a watershed hydrologic analysis, the following simple procedure is generally followed.

A. Locate the design point based on stream/road crossing.
B. Determine the extent of the watershed draining to the outlet point. Delineate the watershed boundary.
C. Subdivide the watershed into sub-areas based on watershed heterogeneity and locations where peak discharges and/or hydrographs are desired within the watershed.
D. Determine rainfall frequency data for the watershed location. Select method for calculating the Time of Concentration (NRCS Lag Equation or Velocity Method).
E. Enter hydraulic geometry channel depth and width coefficients (or use default values).
F. Estimate hydrologic parameters such as area, runoff curve number, and time of concentration for each sub-area. Estimate length and cross section rating tables for channel routing reaches.
G. Assemble model input and develop WinTR-20 model schematic.
H. Format model input for WinTR-20, execute the model, and view results.

This simplified procedure was used as the basis for creating NRCS Hydro functionality. Steps in this procedure have been automated to take advantage of geographic and hydrologic data and efficient GIS processing capabilities.

[1.] Hydraulic Engineer, NRCS, 5601 Sunnyside Ave. Mail Stop 5420, Beltsville, MD 20705-5420.
[2.] Physical Scientist, NRCS, NCGC, P.O. Box 6567, Fort Worth, TX 76115.

Attachment I. Martin Becker's email of 6/1/04 to Don Frevert and Sam Lin

Don and Sam,

Item #6 should include the conversation between Sam and me in which Sam acknowledged that the comments were his opinion and not based on specific guidance. Additionally, with all due respect, it should be noted that the first bullet is incorrect (see the minutes for 1/04) and, therefore, the accuracy of the next two bullets are questionable.

Please include these comments in the final minutes.

Thanks,

Martin Becker

Attachment II. Advanced Hydrologic Prediction Service (AHPS)

II.A: An Example of AHPS

The NWS Hydrologic Services Program wants to recognize the contributions of numerous cooperators and sponsors who provide data critical to its river forecast and warning services. Enhancement of these operations is taking place as part of Advanced Hydrologic Prediction Service which will make

extensive use of the Internet to make wide range of hydrologic services available. On Web pages that include observations, the NWS plans to provide attribution for agencies that sponsor and/or manage observing systems. In some cases more than one agency contributes.

The NWS proposes to include a notation similar to the following on its Web pages that contain data supported by other organizations: “Observations courtesy of the State of Indiana and the US Geological Survey” The NWS Hydrologic Services Program wants to recognize the contributions of numerous cooperators and sponsors who provide data critical to its river forecast and warning services.

Enhancement of these operations is taking place as part of Advanced Hydrologic Prediction Service which will make extensive use of the Internet to make wide range of hydrologic services available. On Web pages that include observations, the NWS plans to provide attribution for agencies that sponsor and/or manage observing systems. In some cases more than one agency contributes.

The NWS proposes to include a notation similar to the following on its Web pages that contain data supported by other organizations: “Observations courtesy of the State of Indiana and the US Geological Survey”

Attribution1.pdf

II.B: Emailed Comments

Subject: Reservoir Data
Date: Thu, 22 Apr 2004 07:42:05 -0400
From: Frank Richards <Francis.Richards@noaa.gov>
Organization: DOC/NOAA/NWS - National Weather Service
To: Thomas Donaldson <Thomas.Donaldson@noaa.gov>
CC: "Lins, Harry" <hlins@usgs.gov>, "Pasteris, Phil" <ppasteris@wcc.nrcs.usda.gov>,
"Svoboda, Mark" <msvoboda2@unl.edu>

Tom -

As we discussed, I would appreciate it if you could raise the issue of a national data base of reservoir information at today's meeting of the ACWI Subcommittee on Hydrology. A brief summary of the issue is provided below.

Thanks

Frank

Reservoir operations are distributed among numerous agencies and there is currently no single location that provides a comprehensive source for reservoir data. In particular, authors of the Drought Monitor [http://www.drought.unl.edu/dm/monitor.html], a weekly national assessment, have indicated their desire for an integrated source of reservoir information. Clearly, there are other users who would also benefit from such a single source of this information.

Individuals in the U.S. Geological Survey (Harry Lins), the Natural Resources Conservation Service (Phil Pasteris), the National Weather Service (Frank Richards), and the National Drought Mitigation Center (Mark Svoboda) are exploring the possibility of a "U.S. Water Monitor" [http://water.usgs.gov/waterwatch/watergov/] that would include reservoir information.

Endorsement of this effort by the Subcommittee could facilitate development of a national reservoir data base available on the Web. We would like the members of the Subcommittee to determine whether their agencies would be willing to provide this information in a standard format, possibly XML (Extensible Markup Language). Assuming a positive response, a workgroup would be established to determine what information would be provided, the format that would be used (XML schema), and who would be responsible for maintaining the national data base.

Attachment III. USGS National Streamflow Information Program – 2004 Update

Streamgaging under the National Streamflow Information Program (NSIP) provides the Nation with streamflow information to help protect life and property and manage our water resources. The streamgaging network is supported by four funding sources: the USGS through the Cooperative Water Program, the USGS NSIP, other Federal agencies (primarily the Corps of Engineers and Bureau of Reclamation) and 800 State and local funding partners (figure 1) who now fund about 67 percent of the USGS streamgaging network.

In 2003, the USGS operated over 7,300 streamgages. This number has been rising slightly over the past 4 years (figure 2). However, given the way that streamgages are funded, based heavily on partner needs and partner funds, there are often significant year-to-year changes in individual streamgages in operation and an instability in the network. The instability of the network remains a concern of the USGS and many users of the data. For example, due to State funding shortfalls in Indiana, at the start of fiscal year 2004, 23 daily streamgages out of a statewide network of 173 were discontinued. Of these discontinued streamgages, 19 had 30 or more years of record, and the longest of these records was 60 years for Busseron

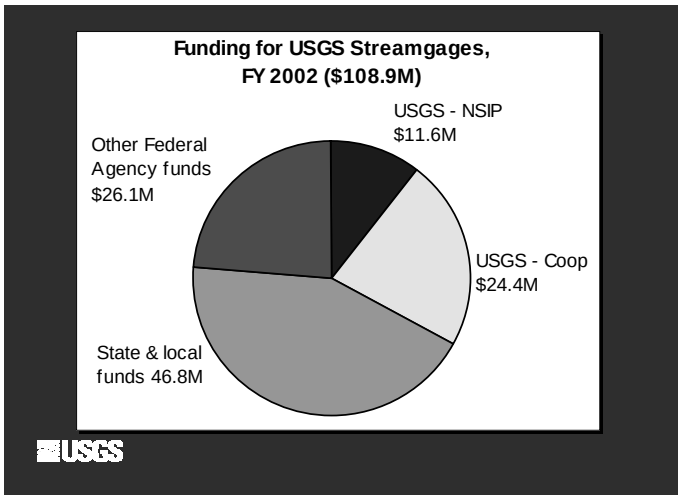

Figure 1 - FY 2002 funding for USGS streamgages

Creek near Hymera, IN. Since then, Indiana has added three new streamgages. In Mississippi, 8 daily streamgages were lost, three of which had with 30 or more years of record, with the longest record of 74 years at Tibbee Creek near Tibbee, MS.

The USGS continues to make great advances in upgrading streamgages with near real-time data delivery capabilities (figure 2). About 93 percent of the streamgages have telemetry (satellite, radio, or phone) and are now able to deliver data to users in near real-time via the World Wide Web.

Long records are vital to the characterization of regional hydrologic conditions (for purposes of planning of water supplies and for flood hazard assessments) as well as for documenting and understanding of the many changes that are taking place in streamflow due to changes in land use, water use, ground-water development, and climate. During the period 1990 to 2000 there was a net loss of 573 active streamgages with records of 30 years or more. ("Net loss" is defined as the number of long record stations discontinued minus those that were reactivated). This trend was briefly reversed in 2002 as a result of the funding increase received by NSIP in 2001 (see figure 3) when there was a net increase of 84 long-record streamgages due to reactivations, record increases, and no losses of long-record streamgages. In Fiscal Year 2003, however, there were 19 losses and no reactivations of long-record streamgages. Expectations for FY 2004 and 2005 suggest a continuation of the instability of the network and the pattern of more losses than reactivations of long-record streamgages. This expectation is based on the fact that funding levels for the Cooperative Water Program and NSIP program both showed very slight declines from FY 2003 to FY 2004 and similar slight declines are expected in FY 2005. The budgets of many funding partners also continue to be very constrained.

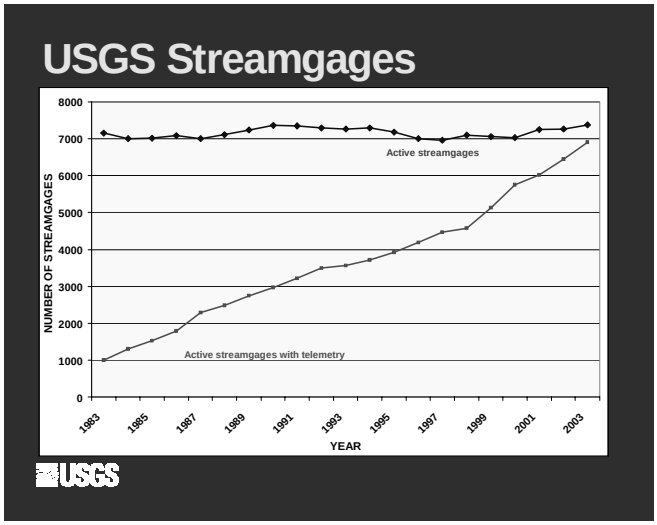

Figure 3 - Number of USGS Streamgages Through Time

Over the last 10 years, the USGS funding for streamgages has been essentially flat or slightly declining except for the increases in FY2000 and FY2001 (figure 3). Partner funding has been increasing slightly over this same time period but not enough to keep up with inflationary cost increases. The cost of streamgaging is often a topic of concern among the partners and stakeholders of the program. A recent cost analysis shows that nationwide the annual cost of operating a USGS streamgage has increased by about 3.8 percent per year from 1997 to 2003. The single largest part of the cost of streamgage operations is the salary costs for the hydrologic technicians who maintain and operate the network. Over this same period of time, the average salary of a GS-9, step 1, Hydrologic Technician (typical of those who conduct this work) increased at an average rate of 4.5 percent per year. Thus, the ratio of annual streamgage costs to salary levels has actually decreased by about 0.7 percent per year. In light of the improvements in data delivery and reliability that have taken place over this time, the USGS believes that the program continues to be operated in a cost effective and

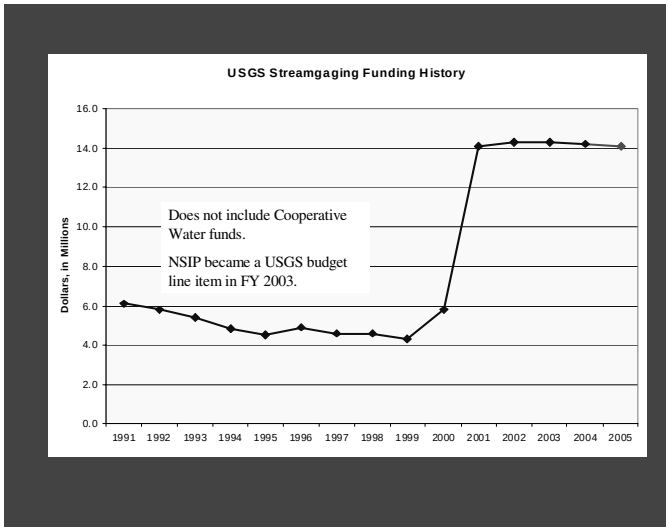

Figure 3 - NSIP Funding History

efficient manner. The costs per streamgage born by the many partners are rising less than would be caused by the mandated pay increases.

NSIP is also investing significant resources into long-term improvements in the overall delivery of streamflow information to users. These improvements include: database enhancements that will streamline the computational process and that will improve users access to real-time and historical streamflow information, new methods of regional assessments of streamflow information to define trends and estimate streamflow at ungaged locations, and research and development aimed at new ways to measure streamflow more accurately, less expensively, and more safely.

For additional information on the National Streamflow Information Program, contact the program coordinator, J. Michael Norris, mnorris@usgs.gov, 603-226-7847, or visit http://water.usgs.gov/nsip/.