

**MEETING OF ADVISORY COMMITTEE ON WATER INFORMATION'S
SUBCOMMITTEE ON HYDROLOGY**

OCTOBER 2, 2003 MEETING
MAIN INTERIOR BUILDING, WASHINGTON, D.C.

AGENDA

- 1) Welcome and Introductions
- 2) Review and Approval of Agenda
- 3) Approval of Minutes from August 7th Meeting
- 4) Action Items from August 7th Meeting
- 5) Update on Committee Membership
- 6) Plans for Joint Federal Interagency Hydrologic Modeling and Sedimentation Conference in 2006
- 7) Review of Terms of Reference
- 8) Hydrologic Frequency Analysis Workgroup Update
- 9) Hydrologic Modeling Workgroup Update
- 10) Update on ACWI Meeting on September 9
- 11) Announcements and Business Reports from Attendees
- 12) Other Business
- 13) Next Meeting
- 14) NWS efforts in Updating Precipitation Frequency Estimates
- 15) Adjournment

SUMMARY OF MEETING

PARTICIPATING

Don Woodward, American Forests
Will Thomas, Association of State Floodplain Managers
Martin Becker, Defenders of Property Rights
Sam Lin, Federal Energy Regulatory Commission (FERC)
Jon Werner, Natural Resource Conservation Service
Eugene Stallings, National Hydrologic Warning Council
Douglas James, National Science Foundation (NSF)
Tom Donaldson, National Weather Service
Geoff Bonnin, National Weather Service
David Wingerd, US Army Corps of Engineers
Don Frevert, US Bureau of Reclamation
Chris Knopp, USDA Forest Service
Steve Glasser, USDA Forest Service
Myra Price, US Environmental Protection Agency

Steve Blanchard, US Geological Survey (USGS)
Robert Mason, US Geological Survey (USGS)
Doug Glysson, US Geological Survey (USGS)

MEETING HIGHLIGHTS

Don Frevert called the meeting to order at 9:35 a.m.

Welcome and Introductions

There were 17 attendees representing 13 member organizations.

Review and Approval of Agenda

The meeting agenda was approved.

Approval of Minutes from August 7th Meeting

The minutes of the August 7th subcommittee meeting have been updated and posted on the subcommittee's website below as the "August 7, 2003 Meeting:"

http://water.usgs.gov/wicp/acwi/hydrology/minutes/Minutes_080703.html

Action Items from August 7th Meeting

Action: Don Woodward formulated a set of revised wording for the terms of reference (TOR).

Action: Don Frevert contacted ARS and FHWA representatives by e-mail to confirm their desire to remain as a member organization of the subcommittee by attending the future meetings.

Action: George Leavesley will send out two complimentary copies of the proceedings from the 2002 conference to each member organization.

Action: Jon Werner will provide the subcommittee with additional information on the Subcommittee on Water Availability and Quality which reports to the President's Office of Science, Technology and Policy.

Update on Committee Membership

The primary FHWA representative, Joseph Krolak agreed to attend the future meetings (but could not attend this meeting due to schedule conflict) and will plan to add an alternate as soon as one has been designated. Although ARS has not responded yet, Frevert will continue his effort to invite them to rejoin the SOH by attending the future meetings.

Sam Lin circulated the latest version of roster for attendees to update and found USGS' new alternate is Robert Mason. The primary FEMA representative needs to be designated.

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

Doug Glysson presented the plans for Joint Federal Interagency Hydrologic Modeling and Sedimentation Conference in 2006 using the PowerPoint slides of Appendix A, "Joint Conference presentation."

The following recommendations were made:

1. Holding the joint conference in 2006
2. Conference sites in order of priority:
 - Silver Legacy (3/8-17; 3/29-4/8; 5/3-12)
 - Riviera (6/21-30)
 - Nugget (3/2-10)

Review of Terms of Reference

Since the SOH works at the pleasure of ACWI, Mr. Woodward proposed the rewording of Section IV E below dealing with submission of documents to Federal Register:

*"E. Before proposing consensus guidelines, methods, or standards for voluntary implementation nationwide, it is appropriate for the Subcommittee on Hydrology to **obtain public comments with the assistance of ACWI** ~~announce proposed guidelines, methods or standards in the Federal Register for the purpose of obtaining public review and comment on the technical aspects of the guidelines.~~ As it deems appropriate, the Subcommittee will revise its proposals and products based on the public review comments. The Subcommittee will document the results of the public review, comments and revisions in the final draft information submitted to the ACWI for deliberation and approval."*

Hydrologic Frequency Analysis Work Group Update (UPDATED)

Will Thomas reported that the Hydrologic Frequency Analysis Work Group had not met since the August 7, 2003 meeting of the Subcommittee on Hydrology. Will reported that Jerry Stedinger, Cornell University, had distributed a paper entitled "LP3 Quantile Estimators with Regional Skew

Information and Low Outlier Adjustments" to the entire work group. This paper illustrates the value of regional skew when used in conjunction with the Expected Moments Algorithm (EMA), a relatively new approach for defining the moments of the log-Pearson Type III (LP3) frequency distribution.

Jery distributed the paper to illustrate the value of regional skew in support of a task force of the HFAWG that is evaluating the benefits of updating regional skew procedures in Bulletin 17B. The paper distributed by Jery also illustrates an approach for adjusting for low outliers when using the EMA approach.

Will reported that skew task force will be making a case for the need for a new nationwide skew analysis that will improve flood frequency analysis for gaged watersheds. Will noted that a new nationwide skew analysis is also a part of the USGS proposal "Improving Flood Information Used for Flood Mapping in the United States" and he expressed his opinion that a new nationwide skew analysis was needed to improve Bulletin 17B procedures.

Hydrologic Modeling Work Group Update (updated)

Hydrologic Modeling Task Group:

Don Frevert noted that Doug Glysson's report covered much of the work of the Hydrologic Modeling Task Group. At its August 7th meeting, the subcommittee had informally agreed to hold the 2006 Federal Interagency Hydrologic Modeling Conference in conjunction with the Sedimentation Conference.

The concept of the joint conference was unanimously endorsed. The joint conference had also been agreed to by the Sedimentation Committee at their September meeting.

The task group will need to convene and select a new chair due to the impending retirement of Arlen Feldman. Also several positions for the 2006 conference identified by Doug Glysson will need to be filled.

Action: Don Frevert will organize a conference call of the Hydrologic Modeling Task Group before the holidays. The task group will fill the above noted positions as part of that conference call.

Update on ACWI Meeting on September 9

Sam Lin reported that the annual ACWI meeting was held at the Days Inn Hotel near Dulles Airport for two days of September 9 and 10. There were about 70 participants for this meeting. The subcommittee's presentation was arranged in the afternoon of September 9. The presentation slides have been posted on the ACWI meeting web site.

Before the presentation, the ACWI alternate chair, Dr. Bob Hirsch emphasized the special importance of our subcommittee involving water quantity in addition to the ACWI's other many

subcommittees or work groups involving water quality. Afterwards, Dr. Hirsch gave his positive response by commending our Subcommittee's achievements in general. For example, he recognized the contribution made by the HFA work group by laying down defensible procedures for flood frequency analyses. But he also asked a question concerning the vulnerability of natural hazards such as hurricanes and vandalism to the ground receivers of satellite signals.

The subcommittee's accomplishments were significant and the subcommittee received public recognition on its accomplishments.

Action: Frevert will pass Dr. Hirsch's question to the Satellite Telemetry Interagency Work Group's outgoing chair, Jim Doty (BOR) to respond.

Announcements and Business Reports from Attendees

NRCS:

Jon Werner reported that the National Meeting of State Conservation Engineers was to be held the following week in Tunica, MS.

USGS:

Steve Blanchard reported that USGS has activated its NatWeb and NWIS-RT systems to improve and secure Internet posting of its streamflow data. Previously all USGS Internet data were posted from one server in Reston, Virginia. Now, with NatWeb, computed data are mirrored on 3 servers, one each in Virginia, South Dakota, and California and connected by two separate networks. During normal operations, NatWeb monitors server workloads and distributes incoming data requests among the three servers to best utilize capacity. If one or two of the NatWeb servers or a network connection fail, Internet inquiries are routed to the remaining servers.

In order to ensure that USGS hydrographers can acquire and work up the streamflow data, NWIS-RT independently acquires GOES-telemetered data concurrent with the USGS District computers and mirrors their processing databases including the station ratings, shifts, datum corrections, and field-instrument. If a District computer fails, NWIS-RT can be used by either the local District hydrographers or hydrographers from other districts to remotely process incoming data and field measurements so that the data distributed on the Internet reflect the latest in field conditions.

Both systems were activated on an emergency basis during the power blackout of the Northeast in August and the Hurricane Isabel and both performed well. Taken together, the new systems are a major step toward dependable 24/7 capability in USGS streamgaging operations.

The USGS budget in general, and the portion support streamgaging in particular, are expected to be the same as FY03. As a result, there will be a slight reduction in the number of gages funded by the USGS due to inflationary costs increases and the flat budget. The biggest concern for streamgages results from State budget deficits and reductions from other Federal agencies. The USGS polled its District offices to get a feel for how many gages are at risk in FY04 and the response received

indicated that several hundred stream gages could be shut down in FY04 due to state and other federal agency reductions.

NWS:

Tom Donaldson reported on the NWS Advanced Hydrologic Prediction Service (AHPS) success story for Hurricane Isabel. He explained that one of the ultimate goals for AHPS is to have real time flood forecast inundation maps at most major flood prone areas of the US. One of the first areas to attempt this was in North Carolina on the Tar River. A pilot project was begun approximately 2 years ago and was to be completed on 1 October 2003. That project was on schedule to meet that goal, when Hurricane Isabel came along. Homeland Security Secretary Tom Ridge called the NWS and asked if the project could be put into practice ahead of schedule to be of use in case Hurricane Isabel went through the affected area. The final touches were rushed into place and made available the day the hurricane came on shore. There was some flooding on the Tar River from the hurricane and the flood inundation maps worked throughout the event. The real time maps may be viewed at the South East River Forecast Center web site, www.srh.noaa.gov/serfc. A printout of the days map product with narrative forecast was provided to those in attendance. In answer to the question, "How well did the forecast maps work?" Donaldson reported that they were available throughout the event, but that an evaluation of their accuracy and usefulness was still ongoing.

Donaldson next reported that representatives of the NWS would be attending the upcoming annual conference of the National Hydrologic Warning Council. NWS is a sponsor of the conference and will have a booth there. Dr. Richard Spinard, Assistant Administrator, National Ocean Service will be the keynote speaker, and there will be 20 different presentations during the week by NWS employees.

FOREST SERVICE:

Steve Glasser described briefly the status of the interagency handbook for managing ground water located on federal lands as nearing completion after two years in development. There are 7 experts from the USDA Forest Service, USEPA, and Interior's Bureau of Land Management and the U.S. Geological Survey that are writing the handbook for use by federal land managers and their staffs as they deal with the full spectrum of quality and quantity issues related to ground water development and protection. The first complete draft of the handbook is expected to be circulated within the Forest Service and BLM by the end of 2003 for review and comments, with the final version ready by mid-2004.

Chris Knopp mentioned that the Forest Service has adopted a set of six "Guiding Principles" for managing water resources on the almost 192 million acres of land that the Forest Service manages. The agency is presently developing an "Action Plan" to aid and focus the implementation of the six principles. Copies of the principles could be supplied this group at the next meeting if you wish.

DEFENDERS OF PROPOERTY RIGHTS:

Martin Becker had no new developments to report.

EPA:

Myra Price reported that the process to determine sediment standards has been set up by their Science Advisory Board.

BUREAU OF RECLAMATION:

Don Frevert noted that USBR is actively involved in the administration's Water 2025 initiative. The USBR-USGS Watershed and River Systems Management Program could make a significant contribution to the initiative.

Reclamation remains on line and has full internet communication capabilities. No interruptions in this service are foreseen in the immediate future.

FERC

Sam Lin reported that FERC's Division of Dam Safety and Inspections recently directed that the 100-year flood peak discharge for project sites. The majority of high or significant hazard potential dams under FERC's jurisdiction are generally designed for the probable maximum flood (PMF) peak discharge. The chance of a 100-year flood event occurring at a project site is much higher than the chance of the PMF event. Concerning the potential for occurrence in reality, the PMF is a very rare, ultimate loading event, whereas a 100-year flood event that is also called "a life-time event" has 1% annual chance of occurrence.

For example, in our society, the critical 100-year flood event has been used as a basis for the management and regulation of floodplain and flood insurance policy. As the legitimate basis, FERC's Operating Manual addresses the requirement to determine a 100-year flood estimate in Section 4-17 as the minimum hydrologic safety protection level for a low hazard dam or some high or significant hazard potential dams if their required inflow design floods (IDFs) are smaller than a 100-year event.

In addition, FEMA's Federal Guidelines for Dam Safety (upon which FERC's IDF determination guidelines are based) under Section IV.B.3 also require a dam's crest structure, discharge channel (e.g., ensuring transported sediment not to disturb major floods' hydraulic performance), and energy dissipator (e.g., preventing undermining at the end sill) to exhibit excellent performance characteristics for frequent and sustained flows, such as up to the 100-year flood event.

The 100-year flood protection level can benefit not only the dam structures but also the downstream floodplain subsequently. In essence, there are a number of reasons for attaining or estimating the 100-year flood magnitude as index information for our dam projects including:

- To study dam performance or failure scenarios due to conditions associated with a 100-year flood event from the potential failure mode analysis perspective

- To evaluate the ability of a project's spillway to safely pass intermediate flood events up to a 100-year flood magnitude
- To understand if any risk may exist associated with a project during an intermediate flood event. This would allow preventative measures be taken during emergencies.
- To estimate the durability of some dam structures with or without deficiencies
- To use the information as a risk-based protection level during construction for some rehabilitation projects
- To understand adverse consequence caused by what flows can lead to damaging floods downstream up to a 100-year flood magnitude
- To use the information as a basis value to judge the reasonableness of the determined PMF value for some projects
- To become familiar with the project watershed characteristics.

In developing our procedures, we compile and incorporated various Federal agencies' approaches of estimating the 100-year floods. Mr. Will Thomas would review our draft report and provide his comments. His experience with USGS' and FEMA's approaches of determining the 100-year flood magnitude provides a valuable perspective. We appreciate his enthusiastic response and volunteering to provide information.

CORPS OF ENGINEERS:

Dave Wingerd reported the following:

The U.S. Army Corps of Engineers is upgrading/supplementing the HEC-RAZ stream flow model. This model, developed by Hydrologic Engineering Center (HEC) in Davis California, is by far the most popular of the many software packages that the Corps developed. It has been adopted by multiple federal agencies, state agencies and countries around the world as the model of choice for stream flow simulation. NWS through the support of the Corps is completing two new precipitation frequency studies for the Southwest of the nation and greater Ohio River basin. HEC will make a connection in HMS to the NWS new precipitation frequency data.

HEC-RAZ has been successful used in modeling both stream flow and water quality. Sediment is soon to be added to the suite of modeling options.

Arlen Feldman, a long-time alternate member of the SOH currently plans to retire at the end of 2003.

The Corps is involved in the Iraq reconstruction. Several civilians team are involved. Iraq has an extensive system of reservoirs, connecting channels and flood control and irrigation works. Before the war the system used Corps software, an old version of HEC-5, to regulate the reservoirs. Jerry Webb from HQ is currently in Iraq acting as the minister of water. The Corps is currently involved in the water control regulation and is upgrading the software system.

NATIONAL HYDROLOGIC WARNING COUNCIL:

Eugene Stallings reported that the 2003 Conference of Flood Warning Systems Technologies and Preparedness will be held in Dallas, Texas from October 21-24, 2003. It is the 5th National

Conference and Exposition of the National Hydrologic Warning Council incorporating the 14th Conference of the Southwestern Association of ALERT Systems. Part of my presentation at the Conference will detail the accomplishments of the Hydrology Subcommittee in the past year.

AMERICAN FORESTS:

Don Woodward reported that American forest has moved and the new address is 734 15th Street NW 8th floor, Washington DC 2005-1013. The phone numbers have not changed.

NSF:

Doug James reported that Climate Change Science Program is chaired by James Mahoney, NOAA; Ghassem Asrar, NASA; and Margaret Leinen, NSF with other committee members from Defense, USGS, USDA, DOT, H&HS, Smithsonian, DOE, USAID, Dept. of State. This program has just released the "Strategic Plan for the U.S. Climate Change Science Program," a 200-page document outlining studies to be performed and products to be delivered by the participating agencies over the next ten years related to how climate change is impacting hydrologic (including floods) and other related biogeochemical processes. Copies may be obtained from the CCSP Office at 1717 Pennsylvania Ave. by phone to 202-223-6262 or from <http://www.climatescience.gov>. The people who have worked within these agencies to prepared this document are largely from the research side, and it is important for people with responsibilities for water resources planning and management to become more involved in the process of organizing and conducting the studies that will follow. People in agencies wishing to do so should contact Dr. Jared Entin in NASA at jentin@hq.nasa.gov.

ASSOCIATION OF STATE FLOODPLAIN MANAGERS:

Will Thomas had no new development to report.

Other Business

None.

Next Meeting

The next meeting will be held on Thursday morning, January 29, 2004 at 9:30 am in NWS, Silver Spring, MD.

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

NWS efforts in Updating Precipitation Frequency Estimates

Geoffrey Bonnin presented NWS efforts in updating precipitation frequency estimates using the PowerPoint slides of Appendix B, "NWS Precipitation Frequency Estimates and Federal Responsibilities."

During his presentation, Mr. Bonnin discussed the need to update precipitation frequency estimates across the country. The meeting strongly endorsed the idea based on shared funding among federal water agencies. At the conclusion of the meeting, it was decided that the agency reps would take the funding share proposal back to their agencies to identify the funds and respond by November 15. The SOH will then formally vote on the issue at its next meeting on January 29.

One of the slides notes that while NWS has done precipitation frequency analysis since the early 50s, it is not part of NWS' budget. NWS has done it at the request of and with funding provided by primarily the federal water agencies because NWS is a neutral party - NWS does not pour concrete and NWS does not regulate. Mr. Bonnin would expect a project such as this will take about \$1M/yr over three to four years. He would expect costs to be shared between five to six agencies.

Since a HQ reorganization three years ago, the Hydrometeorological Design Studies Center has made excellent progress. The new scientific approaches were validated, NWS published updates to the Semiarid Southwest on August 6, 2003 and successfully completed an external peer review of updates to the Ohio River basin and surrounding states on September 14, 2003. These products demonstrate the new science, production, and delivery methods NWS is applying. The current estimates date from the early '60s and '70s. Now is the time to build on the progress and complete the update for the rest of the country.

After November 15, Mr. Bonnin will put together a detailed proposal showing deliverables, cost and schedule, and clear reporting and review mechanisms. He will circulate the proposal so that the SOH will be ready to move forward at the January 29, 2004 meeting.

Adjournment

The meeting was adjourned at 12:30 p.m.

Appendix A - **Joint Conference Presentation**
(Double click picture below to view PowerPoint presentation)

PROPOSED JOINT FISC & FIHMC

Recommendations of Site Selection
Committee
Doug Glysson, Jerry Bernard, Paula Makar

Appendix B – **NWS Precipitation Frequency Estimates and Federal Responsibilities**
(Double click picture below to view PowerPoint presentation)

