



**US Army Corps
of Engineers**

UPPER MISSISSIPPI RIVER SYSTEM FLOW FREQUENCY STUDY

(Upper Mississippi, Lower Missouri, & Illinois Rivers)

PUBLIC INVOLVEMENT NEWSLETTER

November 1999

This is the third Upper Mississippi River System Flow Frequency Study newsletter (the first two are dated November 1997 and February 1999). The purpose of this newsletter is to continue to provide the public with updated information about the study's progress.

STUDY BACKGROUND

In October 1997, the U.S. Army Corps of Engineers, in partnership with State and Federal agencies, initiated a study to develop flow frequencies for the main-stem Upper Mississippi, Lower Missouri, and Illinois Rivers. The Upper Mississippi is that portion of the river above the mouth of the Ohio River and includes the Illinois River. The Lower Missouri is that portion of the river below Gavins Point Dam. Flow frequencies are not being developed for the tributaries.

The study partners formed a Task Force which includes representatives from the U.S. Army Corps of Engineers; Bureau of Reclamation; Federal Emergency Management Agency; National Weather Service; Natural Resources Conservation Service; United States Geological Survey; Tennessee Valley Authority; and the States of Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, and Wisconsin.

A Technical Advisory Group, consisting of a panel of nationally renowned scientists knowledgeable in flow frequency analysis, has been contracted by the Corps of Engineers to review and discuss study issues and findings. The members of the Technical Advisory Group are listed in the November 1997 study newsletter.

By the end of the study, the Corps and partnering State and Federal agencies will select and apply the appropriate flow frequency analysis methods and analyze the effects of reductions in flood runoff attributable to flood control reservoirs. The Task Force also will consider potential effects of levee overtopping and/or breaches, determine and select the appropriate hydraulic model and relevant hydrologic and hydraulic data with which to develop water surface profiles for a range of flow frequencies, and develop these profiles.

STUDY PROGRESS CONTINUES

Dr. David Goldman (Corps of Engineers' Hydrologic Engineering Center (HEC), Davis, California), in consultation with the Technical Advisory Group, has provided recommended methods for estimating the flow frequencies in the Upper Mississippi River Basin. These draft procedures are being reviewed prior to final acceptance. The flow frequency methods will be essentially as described in *Bulletin 17B, "Guidelines for Determining Flood Flow Frequency,"* prepared by the Interagency Advisory Committee on Water Data (IACWD) in 1982. Although this document was not necessarily intended to apply to very large river basins, the recommended procedures have been found to be appropriate for this study.

The five Corps of Engineers districts involved in this study (St. Paul, Rock Island, St. Louis, Omaha, and Kansas City Districts) have nearly completed all work to develop estimated unregulated flow values. The unregulated flow values are the computed flood flows that would have occurred if the rivers were not regulated by flood control reservoirs. The estimated unregulated flow values will be used in combination with flow records that predate the reservoirs to create a simulated record of unregulated flows. A flow frequency curve – that is, the relationship between flow and annual probability of occurrence – will be determined for the unregulated flows. Then the relationship between unregulated flood flows and regulated flood flows is used to calculate the flow frequency curve for existing conditions.

Since separate flow frequency curves will be developed for each selected gage location, the values will be adjusted, or smoothed, to obtain consistent estimates of the flood flows. The hydrology portion of the study is currently scheduled for completion by June 2000. Although this is later than originally scheduled, it is not expected to impact the overall study schedule.

The required Digital Elevation Models (DEMs) and cross sections needed to create the hydraulic models are being prepared as part of another Corps of Engineers project and are furnished for use in the Flow Frequency Study at no cost. These DEMs and cross sections are currently scheduled for completion in March 2000. The districts are working on the hydraulic models that will be used to develop flood profiles. The UNET computer program will be used to perform the hydraulic modeling. This unsteady-flow model can predict changes in flood levels over time based on flood hydrographs consistent with the flow frequency curves and the physical characteristics of the channel and floodplain. A hydrograph is the relationship between time and flow. The hydraulic models are scheduled to be ready for use in September 2000. The Flow Frequency Study is now scheduled for completion in March 2002.

CITIZENS' PUBLIC INVOLVEMENT GROUP MEETS

The Citizens' Public Involvement (P.I.) Group met on April 28, 1999. A major concern of the P.I. Group is that data on numerous private levees along the Upper Mississippi, Lower Missouri, and Illinois Rivers are not readily available and that it is important to have the information so it can be included in modeling efforts. The Corps of Engineers is working to gather as much information as possible on the non-Federal levees. (NOTE: If you have information about a private levee that is not eligible under Public Law 84-99, please mail the information (e.g., location (river), height, length, elevation at which the levee fails, date last inspected) to the address listed at the end of this newsletter, ATTN: CEMVR-PM-AE (Simmons).)

At the next meeting, the P.I. Group will begin to plan for the upcoming public meetings which are tentatively scheduled for the winter of 2001. According to the Plan of Study, one public meeting will be held within the boundaries of each of the five involved Corps of Engineers Districts. An announcement of the dates and locations of the meetings will be made well in advance of the public meetings.

TASK FORCE MEETS

The Task Force met on April 29, 1999, in St. Louis, Missouri. A complete summary of this meeting is available on the Internet at the address listed on page 6 of this newsletter. A list of the attendees is provided in the transcript, which is available on request from the Rock Island District, Corps of Engineers.

A brief summary of the meeting follows.

- Dr. David Goldman (Hydrologic Engineering Center) provided a summary of the status of his work. He emphasized that there are no significant differences between the various flood distribution methodologies evaluated.
- Mr. Rolf Olsen (Corps of Engineers' Institute of Water Resources (IWR), Alexandria, Virginia) spoke about risk and uncertainty related to climate change impacts on flow frequency relationships. He concluded by stating that based on the findings related to changes in climate there is no reason to reject using Bulletin 17B for flow frequency determinations.
- Mr. Paul Soyke (Rock Island District, Corps of Engineers) provided a summary of the views of the Citizens' Public Involvement Group. The group has accepted Mr. Arlen Feldman, Hydrologic Engineering Center, as their technical advisor.
- Mr. Dennis Morgan (St. Louis District, Corps of Engineers) provided an update of the progress of the mapping efforts begun as a part of the Scientific Assessment Strategy Team (SAST), which was recently funded with an additional \$5 million. The mapping will result in digital elevation models and digital cross sections for use in hydraulic models. While this data could be used to create topographic maps (with contours), this would require additional effort and cost. The goal is to acquire elevation data that would be suitable for engineers to evaluate flooding in the area.
- Mr. Alan Johnson (Federal Emergency Management Agency (FEMA), Washington, D.C.) then discussed FEMA initiatives related to the mapping and the flow frequency study. He indicated that FEMA is undergoing a large reinvention of its mapping program. It will essentially replace existing maps with new digital mapping. This will require approximately \$865 million. Cooperating technical communities are being identified to help accomplish the work. Funding is a major concern and FEMA wants to cooperate with and take full advantage of the Flow Frequency Study. Mr. Earl Eiker (Corps of Engineers' Headquarters Office, Washington, D.C.) commented on the value of coordinating the Flow Frequency Study with FEMA.

Each of the Federal Agency representatives present provided brief comments.

- Mr. Rick Hulzinga (United States Geological Survey, Rolla, Missouri) pledged continuing support to the study.
- Mr. Donald Woodward (National Resources Conservation Service, Washington, D.C.) commented on the interest and importance of this phase of the study and recommended patience and persistence.
- Ms. Lesley Julian (National Weather Service, Silver Springs, Maryland) indicated her appreciation to be a part of the study and stated that although there seems to be changes in precipitation, they do not seem to have a noticeable impact on flood flow frequency relationships.
- Mr. Ken Bullard (Bureau of Reclamation, Denver, Colorado) commented that the statistics must be smoothed so as to have consistency throughout the study river reach.

- Mr. Alan Johnson (FEMA) commented on the technical aspects of the frequency analysis as a basis to be responsive during the Flood Insurance Rate Map appeals process. He went on to emphasize the importance to FEMA of how levees are to be treated and of the mapping aspects of the study.
- Mr. Albert Schulz (FEMA, Region VII, Kansas City, Missouri) noted that this study is the basis for future studies and is paving the way for major changes.
- Mr. Gregory Lowe (Tennessee Valley Authority, Knoxville, Tennessee) mentioned the value of the partnerships that have been formed due to the Flow Frequency Study and that the TVA is very glad to be a part of it

The representatives of the various States involved also made brief comments.

- Mr. Mel Allison (Department of Natural Resources, Springfield, Illinois) is looking forward to implementation of the study and is impressed by the study to date.
- Mr. Dennis Lawlor (Department of Agriculture, Topeka, Kansas) expressed appreciation to be a part of the study and emphasized that as a regulatory agency the end results and mapping are very important.
- Mr. Dave Ford (Department of Natural Resources, St. Paul, Minnesota) noted Mr. Feldman's outstanding job with the Citizens' Public Involvement Group and emphasized the importance of explaining the study and results so that the public can understand everything clearly. He thought that a Web site may be a good way to get more information out to more people. (NOTE: See **DID YOU KNOW?** on page 5 of this newsletter.)
- Mr. George Riedel (State Emergency Management Agency, Jefferson City, Missouri) was pleased that efforts are underway to develop mapping in coordination with FEMA.
- Mr. Charlie DuCharme (Department of Natural Resources, Jefferson City, Missouri) encouraged everyone to stick together since with such a large project and so much coordination required this will be difficult.
- Mr. Brian Dunnigan (Natural Resources, Lincoln, Nebraska) also mentioned the value in coordination with all the states and the importance of having FEMA support the final products.
- Mr. Bob Watson (Department of Natural Resources, Madison, Wisconsin) emphasized the importance of the mapping indicating if a property owner is in the floodplain or not.

UPCOMING MEETINGS

The next Citizens' Public Involvement Group meeting is scheduled for December 1, 1999, in St. Louis, Missouri. The next Task Force meeting is anticipated in the spring of 2000 to discuss the final hydrology.

NEW PROJECT MANAGER SELECTED

Mr. Dennis Hamilton (Rock Island District, Corps of Engineers) has been appointed as the Project Manager for the Flow Frequency Study. Mr. Hamilton is a registered professional engineer with broad experience in managing and developing water resource projects and studies. As the Project Manager, Mr. Hamilton is responsible for overall management and leadership of the study. Mr. Hamilton may be contacted by telephone at (309) 794-5634 or email: Dennis.W.Hamilton@usace.army.mil.

RELATED ISSUES

AMERICAN HERITAGE RIVERS NAVIGATOR NAMED FOR THE UPPER MISSISSIPPI RIVER

The Corps of Engineers has named Mr. Owen Dutt, St. Louis District, as the River Navigator for the Upper Mississippi River. A River Navigator is a Federal employee who serves as single point of contact for river communities to enhance their awareness of and access to Federal programs and services. The Upper Mississippi River is one of 14 rivers designated by President Clinton as an American Heritage River. Others are the Blackstone and Woonasquatucket, Connecticut, Hanalei, Lower Mississippi, Potomac, Susquehanna and Lackawanna, Cuyahoga, Detroit, Hudson, Willamette, Rio Grande, New River, and St. John's Rivers.

There are 57 communities on the Upper Mississippi River participating in the American Heritage Rivers Initiative. These communities range from Bemidji, Minnesota, to St. Louis, Missouri. To assist the River Navigator, many Federal agencies have appointed River Pilots who will assist the American Heritage Rivers Initiative communities with the programs specific to that agency. Corps of Engineers River Pilots are Russel K. Snyder, St. Paul District; Paul D. Soyke, Rock Island District; and Dennis S. Fenske, St. Louis District.

As the River Navigator for the Upper Mississippi River, Mr. Dutt will work with the river communities, organizations, and Federal agency River Pilots within the multi-state area to develop and implement plans to revitalize and sustain the communities' economy, and to restore the environment along the river. Mr. Dutt's former position as Chief of Planning Division provides him with the experience, knowledge, and expertise to assist the river communities.

FLOOD INSURANCE MAP COORDINATION COMMITTEE FORMED

Based on recommendations from FEMA and in coordination with the Flow Frequency Study Task Force, a coordination committee was formed to address the use of the Flow Frequency Study products to update Flood Insurance Rate Maps (FIRMs). The committee includes representatives from the Corps of Engineers, FEMA, and the States of Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, and Wisconsin.

The new flow frequency estimates and flood profiles to be developed by the Flow Frequency Study will be helpful for revising FIRMs only after existing Federal and non-Federal levee systems are evaluated and certified in accordance with FEMA requirements. The inundated areas shown on FIRMs can be based on only those levees properly certified as providing 100-year flood protection. Funds for evaluating existing levee systems and updating FIRMs in coordination with the affected states and communities are not currently available. (NOTE: See request for levee information in the first paragraph under the Citizens' Public Involvement Group section on page 2 of this newsletter.)

DID YOU KNOW?

The study area map, study newsletters, Citizens' Public Involvement Group meeting minutes, and Task Force meeting minutes can be viewed on the Corps of Engineers' web site at <http://www.mvr.usace.army.mil/>. Click on "Flow Frequency Study."

STUDY POINT OF CONTACT

For further information or questions about the Flow Frequency Study, or if you have comments about the study, please contact Mr. George F. Gitter, AICP, Study Coordinator, Rock Island District, Corps of Engineers, by telephone (309) 794-5387, Fax (309) 794-5710, or email: George.F.Gitter@usace.army.mil. If you prefer, you may write to Mr. Gitter at the following address:

U.S. Army Engineer District, Rock Island
ATTN: CEMVR-PM-M (Gitter)
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

If you are aware of others who should be informed of this study and who may want to be added to our mailing list, please ask them to contact Mr. Gitter.

We welcome your input.