



**US Army Corps
of Engineers**

UPPER MISSISSIPPI, LOWER MISSOURI, AND ILLINOIS RIVERS FLOW FREQUENCY STUDY

NOTICE OF INITIATION AND PUBLIC INVOLVEMENT NEWSLETTER

November 1997

The U.S. Army Corps of Engineers, in partnership with State and Federal agencies, has initiated a study to develop flow frequencies for the main-stem Upper Mississippi, Lower Missouri, and Illinois Rivers (the attached map shows the study area). 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 will not be developed for the tributaries.

As part of the study's public involvement program, periodic newsletters will be developed to keep all interested persons informed of the study's progress and preliminary results of the study. The purpose of this initial newsletter is to announce the study's initiation and purpose, and to familiarize the reader with some of the study terms. Terms are defined at the end of each section of this newsletter.

TERMS - WHAT DO THEY MEAN?

Flow Frequency – Probability of exceedance of a given flow magnitude at a specific location. Flow frequency is the probability of a peak discharge being exceeded in any year; i.e., a 100-year flood has a 1 percent chance of exceedance in any given year. The flow magnitude and associated water depth for a given flow frequency are the basis for floodplain development regulation such as the 1 percent map for flood insurance.

WHY DO WE NEED TO STUDY FLOW FREQUENCIES? Flow frequencies need to be reviewed on a periodic basis as we obtain more data on, and insight about, the rivers' floods. Upper Mississippi River flood profiles were last developed by an interagency task force in 1979. The 1979 task force recommended revisiting the profiles when additional flow data became available and mathematical models were developed to better define the hydraulics of the river system. We have over 20 years of additional records since 1977 (including the Great Flood of 1993) and a new UNET model has just been completed for the entire Upper Mississippi River.

The study includes reviewing the methodology used in determining flood-flow frequency, selecting and applying the appropriate flow frequency analysis method, analyzing the effects of reductions in flood runoff attributable to flood control reservoirs, considering potential effects of levee overtopping and/or breaches, determining and selecting the appropriate hydraulic model and relevant hydrologic and hydraulic data with which to develop water surface profiles for a range of flow frequency, and developing these profiles.

Following the Great Flood of 1993, two major studies were done to examine flooding on the Upper Mississippi and Lower Missouri Rivers. The first was A Blueprint for Change (Parts I thru V), Sharing the Challenge: Floodplain Management into the 21st Century, Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force, dated June 1994. This document is also known as the “Galloway Report.” The second was the Floodplain Management Assessment of the Upper Mississippi and Lower Missouri Rivers and Tributaries, U.S. Army Corps of Engineers, dated June 1995. Both studies recognized the need to update flow frequencies on a periodic basis.

TERMS – WHAT DO THEY MEAN?

Hydrology – a science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil, and in the atmosphere.

Hydraulics – a branch of science that deals with practical applications of water in motion.

UNET Model – The Unsteady NETwork (UNET) model is a numerical model that can represent the movement of floodwaters in a complex network of open channels. The UNET model can simulate the entire 1993 flood at a given location and includes the effects of local levee breaks on river stages.

WHO ARE THE PLANNING PARTNERS? The study will be conducted by a Federal/State study team with assistance from a specially formed Technical Advisory Group experienced in flood issues. The composition of each group is shown in the following tables:

MEMBERSHIP OF THE FEDERAL/STATE STUDY TEAM
Bureau of Reclamation (Ken Bullard)
Corps of Engineers – Headquarters, Washington, D.C.
Corps of Engineers – Hydrologic Engineering Center, Davis, California
Corps of Engineers – Mississippi Valley Division, Vicksburg, Mississippi
Corps of Engineers – North West Division, Missouri River Region, Omaha, Nebraska
Corps of Engineers – Kansas City District, Kansas City, Missouri
Corps of Engineers – Omaha District, Omaha, Nebraska
Corps of Engineers – Rock Island District, Rock Island, Illinois
Corps of Engineers – St. Louis District, St. Louis, Missouri
Corps of Engineers – St. Paul District, St. Paul, Minnesota
Federal Emergency Management Agency (Frank Tsai)
National Weather Service (Leslie Julian)
Natural Resources Conservation Service (Don Woodward)
United States Geological Survey (William Kirby)
State of Illinois
State of Iowa
State of Kansas
State of Minnesota
State of Missouri
State of Nebraska
State of Wisconsin

MEMBERSHIP OF THE TECHNICAL ADVISORY GROUP

INDIVIDUAL	ORGANIZATION	VITAE
Dr. Jon Hosking	IBM Watson Research Center	Statistician at the IBM Watson Research Center. Dr. Hosking is a well known statistician who has published extensively on the application of statistical methods to water resource engineering problems. Most recently he has co-authored a book with Dr. James Wallis summarizing their work on the application of regional analysis with L-moments. This approach is now used by the National Weather Service to develop rainfall depth-duration frequency curves for the nation.
Dr. William Lane	Bureau of Reclamation, retired	Currently a private consultant in water resources engineering. Author of numerous papers in the field, as well as the computer program LAST, a statistical stream flow model. Recently retired from the U.S. Bureau of Reclamation where he was a recognized expert in statistical hydrology, application of computer models to water resource engineering problems.
Dr. David Maidment	University of Texas	Professor of Civil Engineering, University of Texas. Dr. Maidment has published extensively on the development of methods for modeling watershed precipitation-runoff dynamics. In particular, his work has involved the application of Geographic Information Systems for developing these models. Most recently, he has developed a model of this type for the Upper Mississippi Basin.
Dr. Kenneth Potter	University of Wisconsin	Professor of Civil and Environmental Engineering, University of Wisconsin. Dr. Potter is a recognized expert in the field of statistical hydrology and the application of models to water resource engineering problems. He has published extensively on this subject in numerous engineering journals. Most recently, he has served as a member of the National Research Council review of the flood-frequency analysis developed by the Corps of Engineers for the American River.
Dr. Jery Stedinger	Cornell University	Professor of Civil and Environmental Engineering, Cornell University. Dr. Stedinger is a recognized expert in the field of statistical hydrology. He has published extensively on problems involving flow frequency analysis, low-flow analysis, and statistical hydrology. Most recently, he has served as a member of the National Research Council review of the flood-frequency analysis developed by the Corps of Engineers for the American River.
Mr. Wilbert Thomas	Michael Baker Consultants; United States Geological Survey, retired	Consultant with Michael Baker Jr, Inc., a FEMA designated contractor. Recently retired from the U.S. Geological Survey. He is a recognized expert in flow frequency analysis with extensive experience in examining data from across the country, experience with application of models to water resource problems, and a publisher of numerous papers on water resources engineering. Most recently, he has published work on analysis of the 1993 flood in the Upper Mississippi River Basin.

TERMS – WHAT DO THEY MEAN?

The Technical Advisory Group - a panel of nationally renowned scientists, knowledgeable in flow frequency analysis, who will propose the methodologies that will be used in the study.

WHAT ARE THE PARTNERS' ROLES IN THE STUDY?

The Federal/State Study Team will provide data sets for a contractor to use to conduct analyses to update flow frequencies for the main-stem Upper Mississippi, Lower Missouri, and Illinois Rivers.

The Technical Advisory Group will recommend methodologies to determine flow frequencies for large river basins.

MEETINGS TO DATE. The Federal/State Study Team has had two meetings.

The first meeting was held on June 3, 1997, in St. Louis, Missouri, to organize the group and discuss the scope of the effort required to revise the flow frequencies for the Upper Mississippi and Lower Missouri Rivers.

The second meeting was held on September 23, 1997, in St. Louis, Missouri, to discuss the available methodologies for the determination of flow frequencies and work items for the study.

DO YOU WANT TO BECOME INVOLVED? We will be forming a Citizen's Public Involvement Group for this Flow Frequency Study. The Citizen's Public Involvement Group will work with the Federal/State Study Team to develop ways to involve the public in the study process. This group will be open to all members of the public. If you are interested in becoming directly involved in the study, please contact Mr. George Gitter, Flow Frequency Study Coordinator, Rock Island District Corps of Engineers (see Study Point of Contact paragraph on the following page).

MAILING LIST. This notice of initiation/newsletter is being sent to Federal and State agencies involved in flood control, and county and city governments along the main-stem rivers in the study area. The newsletter also is being sent to congressional interests, levee and drainage districts, organizations within the study area, and individuals known to have an interest in the flow frequency study. If you received this notice, you are on our mailing list and will continue to receive the newsletters.

If you become 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 (see Study Point of Contact paragraph on the following page).

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 Internet: George.F.Gitter@usace.army.mil. If you prefer, you may write to Mr. Gitter at the address listed below:

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We welcome your input.