

# Red River Basin Task Force News

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## Managing the Flood of Information

### Decision Support System

#### Floodplain Management for the Future

Each agency in the Red River Basin has designed information systems to meet their own needs. Communication among agencies is routinely handled by e-mail, fax, voice and other telephone services. The approach reflects the different mandates and organizational structures. Such stand-alone systems create 'Islands of automation' that no longer fully meet the individual or community needs.

With advances in information technologies, we can link those islands and

"The DSS is not only a tool for analysis, but an instrument for communication, training, forecasting, and experimentation."

enable greater sharing and processing of vital information. The Task Force is attempting to make those links through the development of a **Decision Support System (DSS)**. A DSS can provide interactive floodplain

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### Red River Basin Disaster Information Network

#### Launched with Interactive Tools

The IJC Red River Basin Task Force has helped launch the **Red River Basin Disaster Information Network (RRBDIN)**. This network consists of a growing list of members (individuals and organizations) who will use and help develop several tools incorporated into an Internet Web Page (<http://www.emforum.org/redriver/>). The Internet site will include a searchable catalog of available databases, Virtual Forum, Bulletin Board, Documents Library, searchable lists of organizations and points of contact, and other information resources. These tools will enhance and facilitate interaction with one another and make possible the direct and continual exchange of information and ideas between people in the Basin.

The RRBDIN is part of the Task Force strategy to identify an information network for the Basin, engage the broadest possible stakeholder community in this network, and make recommendations for a sustainable virtual presence.

The Network will test the effectiveness of

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an Internet-based system for users to obtain necessary data and use decision-making tools for floodplain management, disaster relief and mitigation. Especially important is the ability of such a system to deliver information during a real emergency.

The RRBDIN will be a single online source for people to locate information and data on floodplain management issues in the Basin. This virtual network of members will also be a resource for evaluating the products developed in this study. The types of contact made possible by this technology should lead to stimulating and creative thinking, and ultimately, a growing knowledge base to benefit all Red River Basin stakeholders long after completion of the IJC study.

The Task Force would like the broadest range of interested individuals to partici-

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## 1997 Flood Compared

The 1997 Red River flood was big. But how big compared to previous record floods? The peak flow at the Forks, the junction of the Red and Assiniboine Rivers in Winnipeg, was about 140,000 cubic feet per second (cfs). In 1826 flood, the largest of record, the flow is estimated at 225,000 cfs and the 1852 flood, 165,000 cfs. But the figures may be misleading. The 1997 flood may be larger than previously thought. W. F. Rannie of the University of Winnipeg examined archival records of the Hudson's Bay Company and other sources. He found that the gap may not be as wide as the numbers indicate.

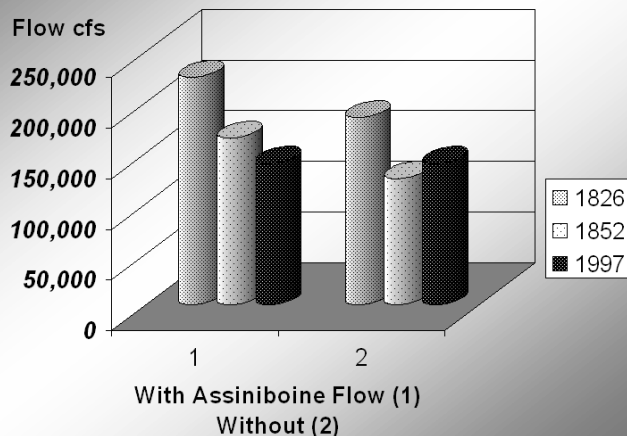
There were no consistent measured flow records prior to 1870. Archival reports of floods and high water conditions provide the evidence.

Rannie documented descriptions of the Red and the Assiniboine floods, which have been neglected in other historical studies. He found the Assiniboine contributed at least 30,000 cfs and more likely 40,000 to 50,000 cfs to the Red River flood peaks for the 1826 and 1852 floods. The flow, without the Assiniboine, would have been approximately 185,000 cfs in 1826 and 125,000 in 1852.

Following the 1950 flood, the federal and Manitoba governments constructed the Assiniboine Diversion to turn flood flows of the Assiniboine north to Lake Manitoba before it joined the Red River at the Forks in Winnipeg. As a consequence, in 1997 the Assiniboine contributed little to Red. In any event the natural flows of the Assiniboine in 1997 were relatively small.

As a result, the 1997 flow of Red River itself could have

Major Red River Floods At Winnipeg



been about 80 per cent of the 1826 flow and greater than the 1852 flow.

Observers in 1852 and 1861 noted that the channel of the river seemed deeper and wider than in earlier years. If true, the comparative severity of the 1997 flood would be even greater. Recent estimates of flow in the early 1800s assumed modern channel dimensions.

W.F. Rannie's report to the Task Force, **A Survey of Hydroclimate, Flooding, and Runoff in the Red River Basin Prior to 1870** can be found at our web site <http://www.ijc.org/boards/rrbtf.html>. It is one of a series of Task Force studies concerning Red River geology and the palaeoflood record ¶

## Contracts

- LIDAR mapping .....EarthData/InterMap (Pembina Area)
- Virtual Forum .....Emergency Information Infrastructure Partnership (EIIP)
- Radarsat Canada .....Manitoba Natural Resources
- Radarsat US .....Vantage Point International
- LIDAR -- Light Detection And Ranging (laser radar) ¶

*(RRBDIN Continued from page 1)*

pate in an exchange of data, information, knowledge, and ideas. The vision is to have the RRBDIN become a trusted and dependable resource for informed decision making built upon and maintained by a strong network of cooperating individuals, organizations, and agencies.

To join, you only need an email address. Both organizational representatives and individuals are welcome. You do not need any particular expertise with the Internet or computer applications, but you should be willing to learn how to use these tools. There is no membership fee. ¶

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management queries and analyses for authorized users across the community of interests. For the Task Force, the DSS will help integrate a variety of work underway by the Database and Tools subgroups. It will also provide a way to answer questions raised by the Task Force.

Task Force member, Dr. Slobodan Simonovic, wrote a white paper on a Red River Basin DSS. He notes that a DSS allows decision-makers to problem solve by combining personal judgment with computer output using quantitative models and database elements. He defines the characteristics of a DSS for sustainable flood management as including:

- *problem identification;*
- *problem formulation (learning);*
- *a "what if" capability (adaptability);*
- *use of analytical models (facilitation);*
- *user-machine interface (interaction);*
- *use of fast-response graphics.*

The Red River Basin Disaster Information Network (RRBDIN) will provide the framework for the DSS. It will be evolutionary to enable cost-effective implementation of new functions as user demands and technical maturity allow.

The decision support capability will emphasize flood prediction and monitoring, emergency response, and public involvement. It will also support the best practices of comprehensive floodplain management in the cycle of preparedness, response, recovery, and mitigation.

The DSS will be developed in several stages beginning with a preliminary prototype that focuses on a portion of the basin and uses a limited number of available databases. An Advanced Prototype will follow initial prototype testing, and finally a fully-functional DSS is envisioned. Each stage of DSS development will consider the integration of functionality, data, and information content from diverse providers within the Basin and beyond. ■

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## Virtual Forums Kick Off with On-line Workshop

Simply making new tools and data available to end-users and data providers in the basin will not assure that the broad goal of "**improved communications, data sharing and cooperation.**" This underlying goal shaped many of the IJC's Interim

Report Recommendations and was identified as critical in the July Information Needs Workshops will be accomplished.

An important feature of the RRBDIN (see related article) is a Virtual Forum. The concept provides for Live Discussion Rooms where round table meetings, presentations on specific topics, or mutual help sessions can be held via the Internet. Discussion Lists are also provided where comments and viewpoints can be aired at the convenience of the contributor.

Individuals can bring their own perspectives and set of experiences, which transcend boundaries of time, place, and in some cases organization, to enhance understanding of different points of view. This concept was presented to attendees of the Information/Data Needs Workshops held in the Basin in July 1998 and was identified by those attendees as a viable method for enhancing communication

Some of the virtual tools you asked for are ready for testing!

and cooperation in the basin.

The first Red River Basin Virtual Forum workshop was held on February 25th. Over twenty-five people logged in to the "Red River Room" to talk about the results of the data/information needs workshops held in the basin last summer. The data gathered will provide direction to further development of the network.

The second Workshop on 25 March addressed the current Spring Flood Outlook for the Red River Basin, and the Advanced Hydrologic Prediction System, a new system for utilizing tools developed under the National Weather Service Modernization Program. Transcripts of the on-line workshops and other background information are available from the Website.

RRBDIN Members are also encouraged to attend bi-weekly member meetings where future workshops are planned and other topics of interest discussed. These meetings are held on-line the first and third Fridays of each month at 9:00 a.m. central time. An online calendar of scheduled meetings and events can be found at <http://www.emforum.org/redriver/> under 'Calendar.'

This Virtual Forum capability is also available for other meetings and on-line discussions that any group in the basin may want to hold. To reserve the Red River Room, contact Amy Sebring, EIP Technical Projects Coordinator, via email at [asebring@emforum.org](mailto:asebring@emforum.org). ■

## Our Reports on the Web

<http://www.IJC.org/boards/rrbtf.html>

- Red River Flooding Short-Term Measures, Interim Report of the International Red River Basin Task Force to the International Joint Commission, December, 1997
- International Red River Basin Task Force, Plan of Study 1998
- Government Follow-up on IJC Interim Report Recommendations on Red River Flooding, July, 1998
- Assessment of the Social Impact of Flooding for Use in Flood Management in the Red River Basin
- Report on A Strategic Research Workshop on The Social Dimensions of the Flood of the Century
- The Role and Reactions of the Municipalities of the Red River Valley During the Flood of 1997.
- A Preliminary Assessment of Environmental Impacts Associated with the 1997 Red River Flood, with Focus on Water Quality
- A Survey of Hydroclimate, Flooding, and Runoff in the Red River Basin Prior to 1870
- Red River Basin Virtual Database: Data Assessment Report (USA). March 1999
- Information/Data Needs for Floodplain Management: The Red River Basin Workshop Report. February 1999

## Keep in touch

To do our job the Task Force needs to work with all of you who have thoughts on how flood issues should be addressed. If you have ideas, information or concerns you wish to pass on or if you wish more information, write to the Task Force by e-mail in the United States at [redriver@prairie.nodak.edu](mailto:redriver@prairie.nodak.edu) and in Canada at [redriver@achilles.net](mailto:redriver@achilles.net). Or you may contact

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- Red River Basin - Virtual Database: Metadata Collection Final Report (Canada). January 1999.
- Red River Basin - Virtual Database: Data Assessment Report (Canada). November 1998.
- Decision Support System For Flood Management in the Red River Basin. November 1998. ¶

## Information/Data Needs Workshops Results are Released

### Better data access and more effective communication emphasized

Results of an analysis of questionnaires and views expressed by basin residents in face-to-face data user needs workshops have been released in a new Task Force report. The workshops arose from a need expressed in the IJC Interim Report (1997) to develop a relevant information/data base for interests within the basin. An assessment of users needs for information and data sharing was seen as a critical first step to any tool or database development.

The concept of a bilateral information base for floodplain management sparked interest from a separate program underway within the U.S. Federal Government – the Global Disaster Information Network (GDIN). The goal of GDIN is to foster effective sharing of disaster-related information through the use of evolving information technologies. The IJC Task Force and GDIN established a partnership and a series of workshops were held in 1998 in Minnesota, North Dakota, and Manitoba on what the fundamental elements of such an information base might be.

The concerns expressed during the three 1998 workshops related to a number of organizational and technical challenges. For instance, individuals wanted to know the lines of authority during the disaster management phases.

The workshops highlighted the need for a basin-wide strategy and a sustainable management approach. Workshop participants wanted clear and simple access to relevant data and information, plus assurances that the data was accurate, timely and of the best quality. Participants also voiced an interest in improved education and training opportunities, along with information on all related activities underway. Perhaps, most importantly, they wanted feedback mechanisms that would allow them to be part of the overall management process.

The report is available in at the IJC Red River Basin Task Force or RRBIN Web Pages (<http://www.ijc.org/boards/rrbtf.html> or <http://www.emforum.org/redriver/workshop/wk990225.htm>) ¶