

SOURIS RIVER, ND: COLLABORATIVE FLOOD RISK MITIGATION SUCCESS STORY



Presentation for the
**Association of State Flood
Plain Managers**

By Terry R. Zien, PE, CFM

3 May 2017



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INTRODUCTION



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NATIONAL SILVER JACKETS PROGRAM

What is Silver Jackets?

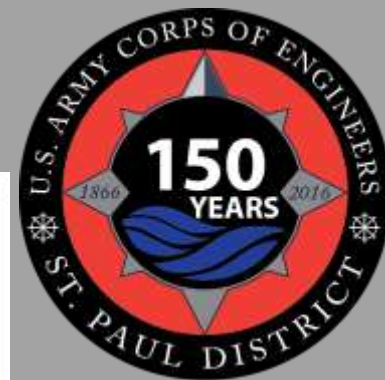
- State-led **interagency** teams - partnership
- Working together to **reduce flood/natural risk**
- Working together to provide a **unified approach**
- No single agency has the complete solution
- Forum to **plan and implement** state priorities
- Resources **leveraged** from all
- Prevent duplication of effort



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NATIONAL SILVER JACKETS PROGRAM



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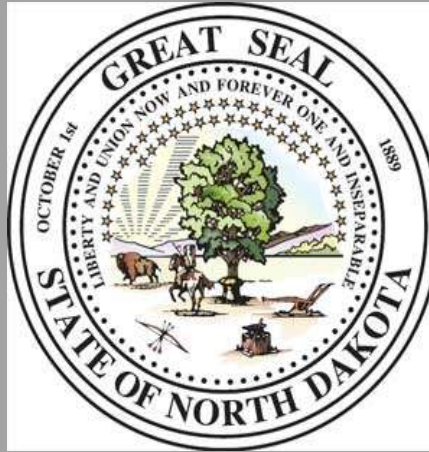


North Dakota Silver Jackets

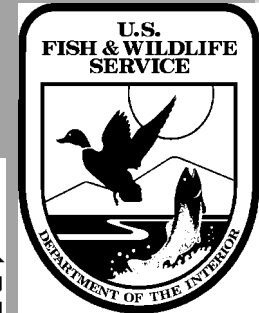
Natural Hazard Risk Management Team



FEMA



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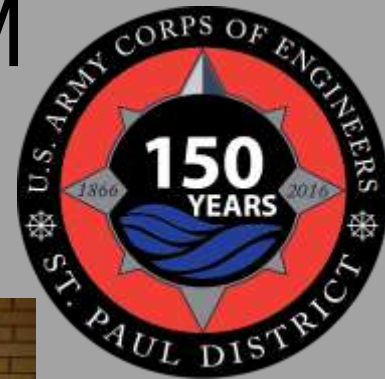
**North Dakota State Water
Commission**



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ND SILVER JACKETS TEAM



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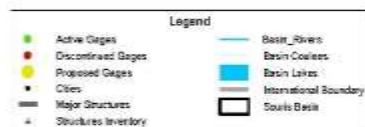
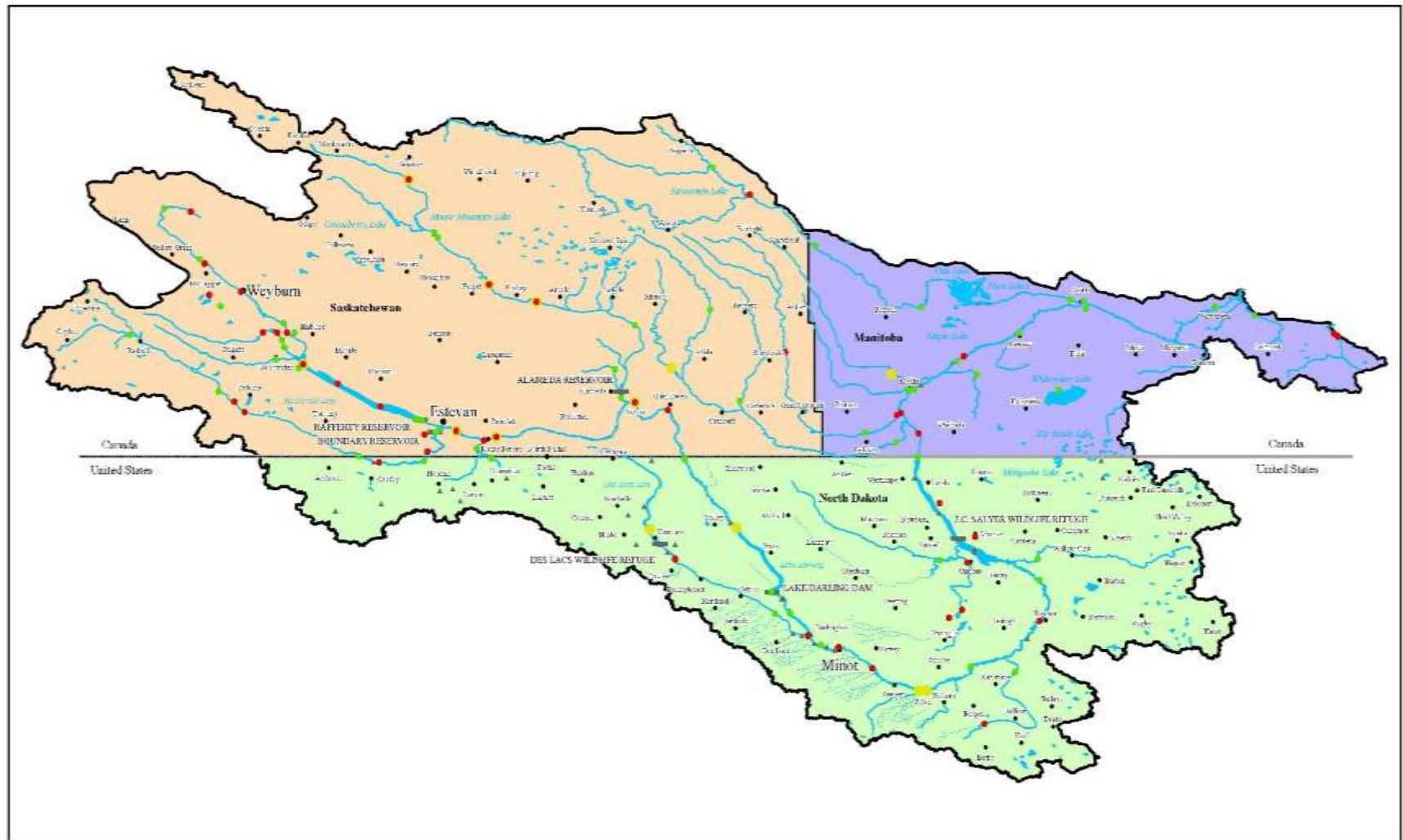
BACKGROUND



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SOURIS RIVER BASIN



Souris (Mouse) River Basin
Stream Gage Network

0 5 10 20 30 40 50
Miles

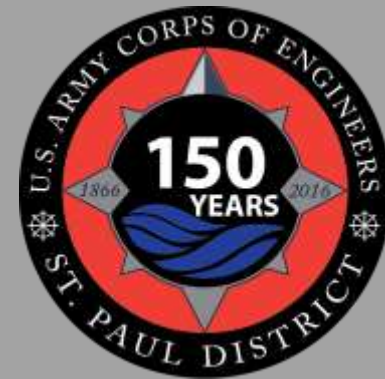
0 10 20 40 60 80 100
Kilometers



THE MOUSE THAT ROARED!

The 2011 Flood of Record

- Observed flow – 27,400 CFS at Minot
- Previous 1% Chance Flood – 5,000 CFS
- New 1% Chance Flood - 10,000 CFS
- Multiple flood peaks over 30 days
- 11,000 + people evacuated from Minot/4,000 structures impacted
- About \$1 billion in damages
- Previous flood of record was in 1881



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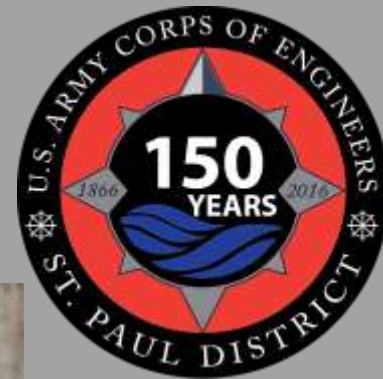
SOURIS RIVER AT MINOT, ND



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SOURIS RIVER AT MINOT, ND



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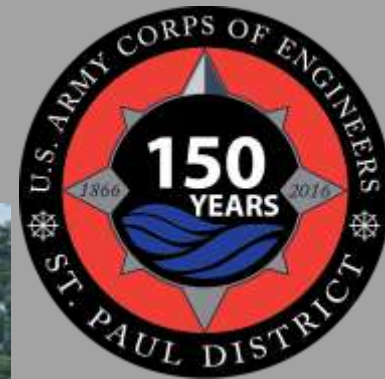
SOURIS RIVER AT MINOT, ND



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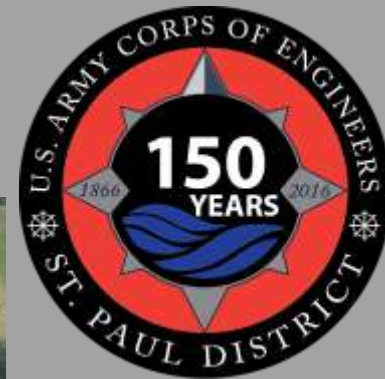
SOURIS RIVER AT MINOT, ND



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SOURIS RIVER, ND



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SOURIS RIVER AT VELVA, ND



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INTERNATIONAL PARTNERS

Plan of Study:

**For the Review of the Operating Plan Contained in *Annex A* of the
1989 International Agreement Between the Government of Canada
and the Government of the United States of America**



Photo credit: Collage developed from images obtained from the USGS library of photographs following the floods in June 2011.

**Prepared for
The International Souris River Board
April 2013
by the
2012 Souris River Basin Task Force**



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INTERAGENCY PROJECTS AND INITIATIVES



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LOCAL PLANNING

The Souris River Joint Board is Securing the future of the Mouse River Basin:

“The Mouse River Enhanced Flood Protection Project began in 2011 and will reduce the risk of future flooding throughout the entire Mouse River Basin.”



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INTERAGENCY PROJECTS AND INITIATIVES



- Update Souris River Basin Hydrology Q-F
- Forecast Model; Rainfall & Snowmelt
- Develop Operating Plan and Testing with POR
- Update Hydraulic Modeling
- Interim Risk Reduction Measures
- Pre-flood Information Packages
- Souris Hydromet Charrette and Report
- **EAP and Non-structural Alternatives Workshops**
- **Rural Flood Plain Structure Inventory**
- USACE Participation in Revision of "Annex A" - ongoing
- Flood Inundation Mapping - ongoing
- USACE 408 Permit and Feasibility Study - ongoing



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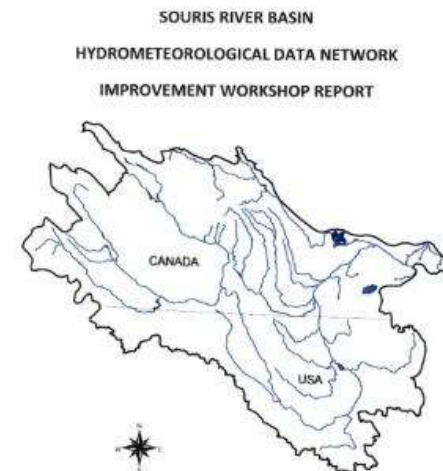


INTERAGENCY PROJECTS AND INITIATIVES



Mouse (Souris) River, ND, Hydromet Study

- Partners
 - USACE
 - USGS
 - NWS
 - US FWS (Representing NWR)
 - ND SWC
 - CA Provincial Governments
 - IJC
- Products/Significance
- Follow-on Actions



INTERAGENCY PROJECTS AND INITIATIVES



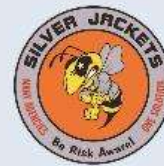
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INTERAGENCY PROJECTS AND INITIATIVES

Emergency Action Plan Guidebook

- Partners
 - MN HSEM
 - ND SWC
 - USACE
 - FEMA
 - WI DEM
- Workshops
- Follow-on Actions



EMERGENCY ACTION PLAN

GUIDEBOOK • November 13, 2014
Version 1.1 January 2015

INTERAGENCY PROJECTS AND INITIATIVES



Emergency Action Plan and
Non-structural Alternatives Workshops:

- Scheduled after public scoping meetings and before the flood plain structure inventory field work
- Designed to inform public officials around the basin



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INTERAGENCY PROJECTS AND INITIATIVES



Rural Flood Plain Structure Inventory:

- Initial meetings and basin tour
- Plan long term scope and strategy
- Use local representatives to engage the public
- Do your homework
- Be honest and objective - listen to the public
- Be accommodating and inclusive
- Participation is voluntary



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INTERAGENCY PROJECTS AND INITIATIVES

Rural Flood Plain Structure Inventory



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INTERAGENCY PROJECTS AND INITIATIVES

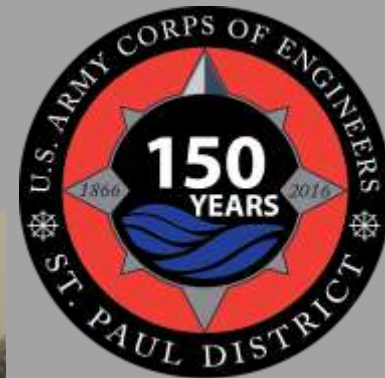


- Rural Flood Plain Structure Inventory
- 165 rural property owners were identified
- 150 participated in four meetings
- About half are participating in non-structural flood risk reduction measures
- The market value of inventoried properties was about \$23 Million
- The State and SRJB have \$11-12 Million of work planned and/or in progress – no Federal money!!



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Questions?



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