

Natural Floodplain Functions Alliance (NFFA)
BI-MONTHLY WEBINAR SERIES PRESENTS:

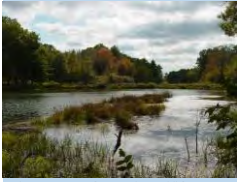


Photo courtesy of U.S. Fish & Wildlife Service

Minnesota's Overall Watershed Approach to Flood Risk Reduction & Protection of Lakes and Streams



Ceil Strauss, CFM
State Floodplain Manager
Minnesota Dept. of Natural Resources

NFFA Webinars Hosted By



November 30, 2017
2:00pm – 3:30pm CT

1



Thank you for
joining us today!

- ✓ Presentation will conclude by 3:30pm CT
- ✓ Q&A will follow the presentation, should it run past 3:30pm CT the recording will continue

2

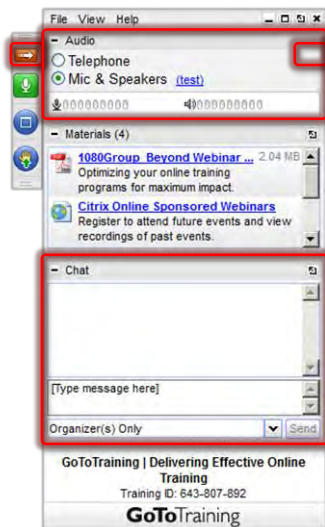
Certificates & CECs



- Attendees must connect and participate individually (no group viewing) to be eligible for certificates and CECs.
- Attendees must participate in the entire event in order to receive a certificate (emailed within 1 week)
- CFMs must participate in the entire event in order to receive CECs.
- CFMs do not need to submit paperwork for CEC credit *EXCEPT* CFMs located in: AR, NM, OK, TX

3

Attendee Participation



Your Participation

Open and hide your control panel using the red arrow button

Join audio:

- Choose **Mic & Speakers** to use VoIP
- Choose **Telephone** and dial using the information provided

Submit questions and comments via the Chat panel

4

Audio & Web Settings



- All lines will be automatically be muted
- Use the question panel to submit questions and responses during the presentation
- Please send questions & comments to **Organizer** (anonymously) or Entire Audience
- During Q&A at the end, please submit your question using the question panel

5

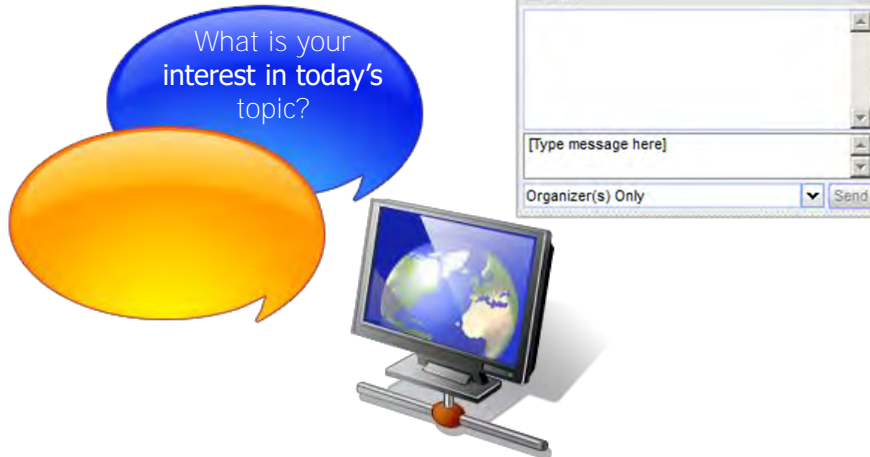
Handouts/Slides



- PDF of today's slides can be found in the Handouts window
- Double click or right click on the file to download/open

6

Questions & Comments



7

This Session is being Recorded



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AGENDA





1. NFFA Federal Updates (15 min):
 - Larry Larson, ASFPM
2. Quarterly Webinar Topic (45 min):
 - **Minnesota's Overall Watershed Approach to Flood Risk Reduction & Protection of Lakes and Streams** (Ceil Strauss)
3. Webinar Q&A

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Photo courtesy of U.S. Fish & Wildlife Service

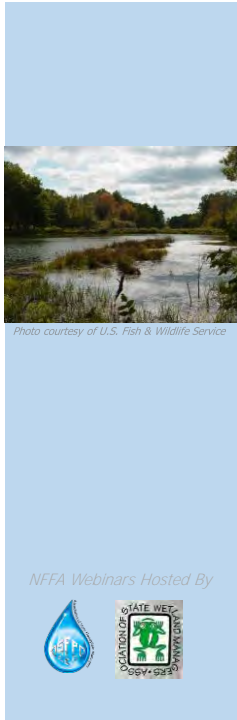
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NFFA Update: National Policy

Larry Larson, P.E., CFM
Senior Policy Advisor
Association of State Floodplain Managers
larry@floods.org

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Natural Floodplain Functions Alliance (NFFA)
BIMONTHLY WEBINAR SERIES PRESENTS:

Minnesota's Overall Watershed Approach to Flood Risk Reduction & Protection of Lakes and Streams



Ceil Strauss, CFM
State Floodplain Manager
Minnesota Dept. of Natural Resources

November 30, 2017
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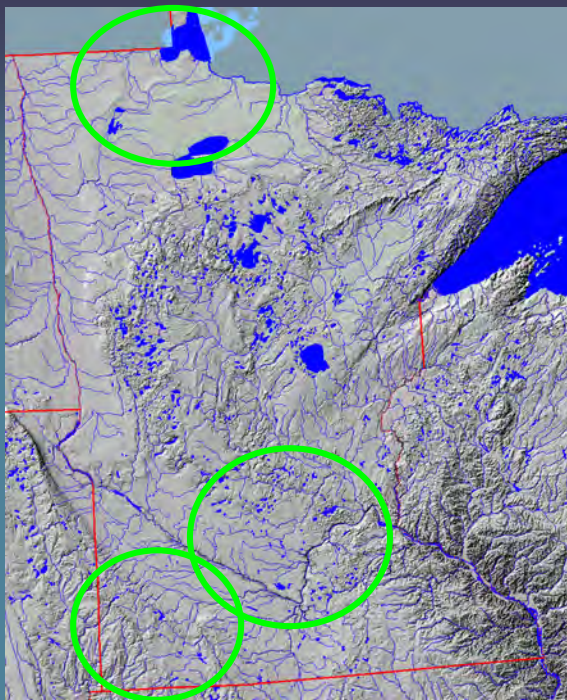
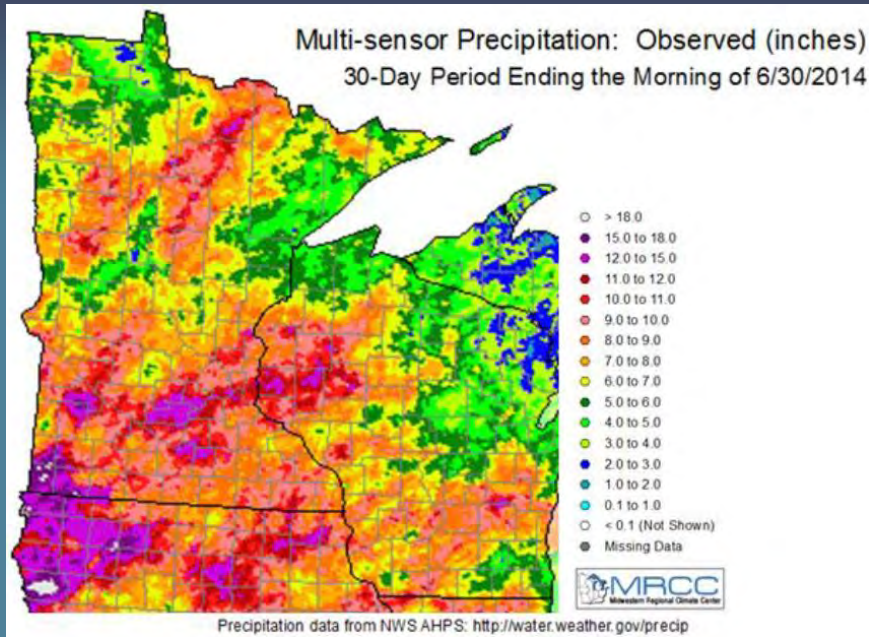
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Minnesota's Overall and Watershed Approach to Flood Risk Reduction & Protection of Lakes and Streams



Ceil Strauss, CFM – MN State Floodplain Manager
For Natural Floodplain Functions Alliance Webinar
November 16, 2017

2014 Flooding in Minnesota



June 2014 Flooding:

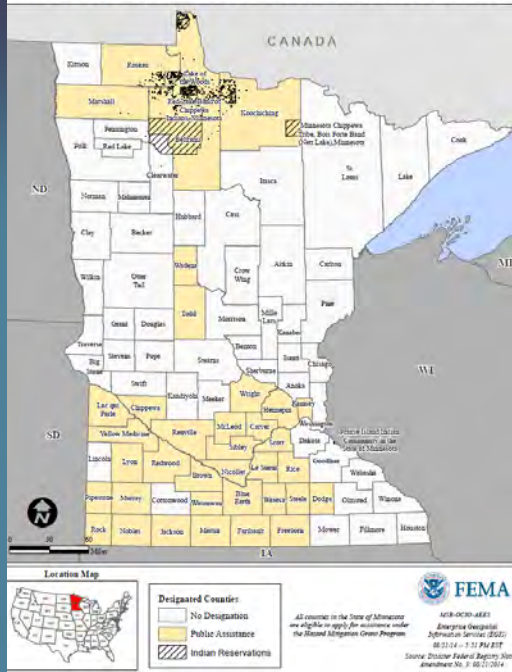
- Rivers peak at record levels in SW
- Then lakes reached flood levels
- Over 100 lakes with highest recorded

Public Assistance (PA):
37 counties
& 3 tribes

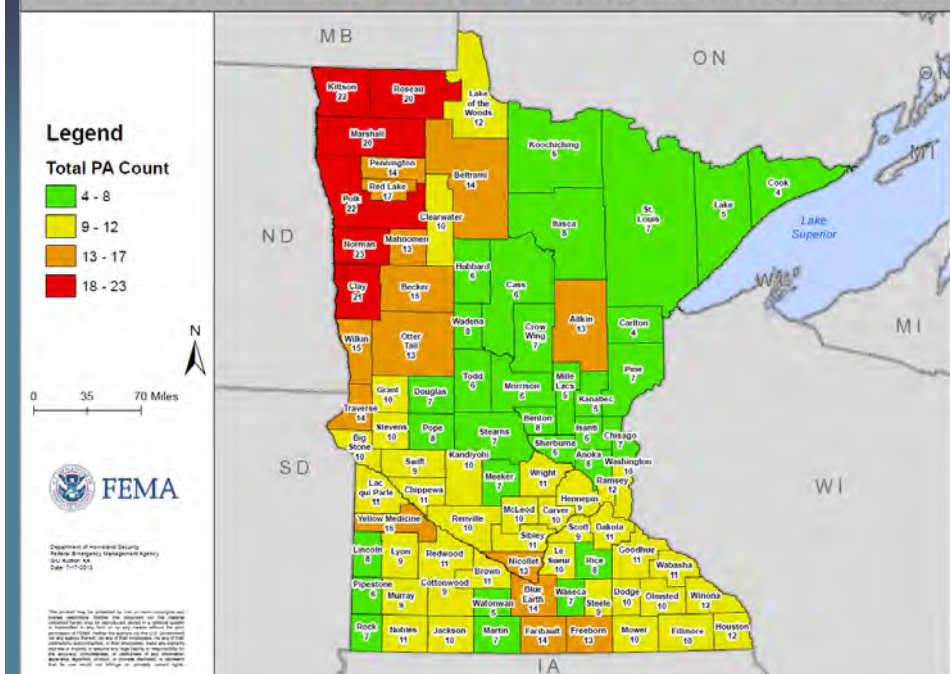
Individual Assistance (IA):
NONE

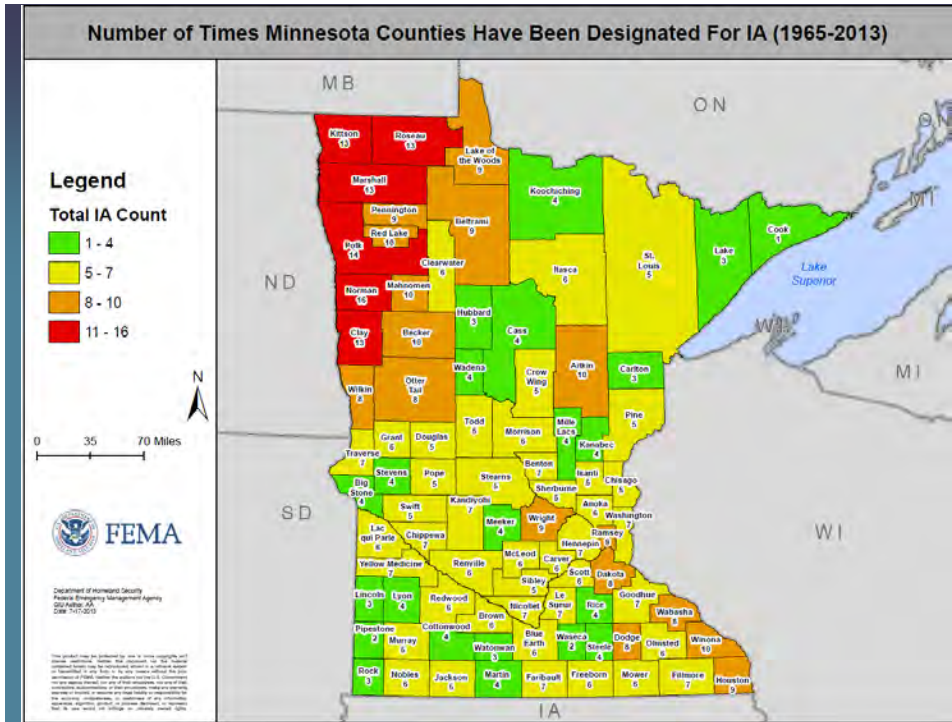


FEMA-4182-DR, Minnesota Disaster Declaration as of 08/21/2014



Number of Times Minnesota Counties Have Been Designated For PA (1965-2013)





2000 – 2009 Presidential Declarations

- March 2009 DR-1830; **Flooding**, etc.
(676 IA applications - \$2.44 Million)
- June 2008 DR-1772; **Flooding**, etc. (no IA)
- August 2007 DR-1717; **Flooding**, etc.
(3,853 IA applicants - \$19.81 Million)
- March-May 2006 DR -1648; **Flooding**, etc. (no IA)
- Nov 2005 DR-1622; Winter storm
- September 2004 DR-1569; **Flooding**, etc.
(1,363 IA applicants - \$4.21 Million)
- June 2002 DR-1419; **Flooding**, etc. (IA; ??#/\$)
- March-July 2001 DR-1370; **Flooding** (IA; ??#/\$)
- May-July 2000; DR-1333; **Flooding**, etc. (IA; ??#/\$)



2010+ Presidential Declarations

- Sept 2016 DR-4290; **Flooding**, etc.
(661 IA applications - \$2.6 Million)
- July 2014 DR-4182; **Flooding**, etc. (no IA)
- June 2013 DR-4131; **Flooding**, etc. (no IA)
- April 2013 DR-4113; Winter storms
- June 2012 DR-4069; **Flooding**, etc. (no IA)
- July 2011 DR-4009; **Flooding**, etc. (no IA)
- May 2011 DR-1990; Tornadoes, etc.
- March 2011 DR-1982; **Flooding**, etc. (no IA)
- Sept 2010 DR-1941; **Flooding**, etc. (no IA)
- June 2010 DR 1921; **Flooding**, etc. (no IA)
- March 2010 DR-1900; **Flooding**, etc. (no IA)



Overview

- Brief mention of many efforts
- Not steady progress – mainly improvements, but some back sliding along the way
- Coordinated efforts involving many state agencies
- Critical cooperation between state, regional, watershed and local levels



Main State Agency Players

- Department of Natural Resources (DNR)**

 - Public Waters management & permits; Floodplain / Shoreland / River land use oversight; River Ecology Unit
- Board of Water & Soil Resources (BWSR)**

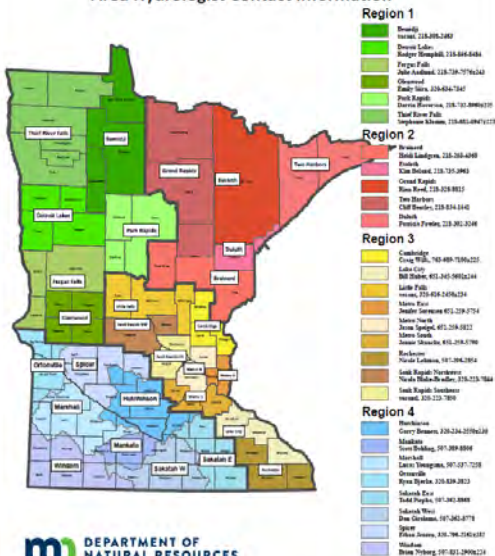
 - Watershed Districts; Soil & Water Conservation Districts (SWCDs); State Wetland Conservation Act
- Pollution Control Agency (PCA)**

 - Water quality
- Division of Homeland Security Emergency Management, Dep't of Public Safety (HSEM)**

 - FEMA Mitigation; FEMA disaster response

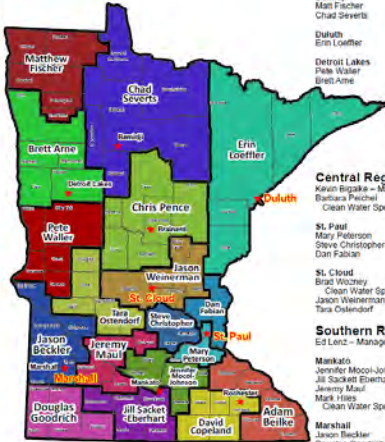


DNR Ecological and Water Resources Division Area Hydrologist Contact Information



DNR staff working with water permits and land use program oversight around the state

Board Conservationist Work Areas



Northern Region	
Ryan Hughes - Manager	(218) 723 - 4923
Jeff Hubbs -	(218) 203 - 4476
Clean Water Specialist - Northeast	
Henry Van O'Brien	(218) 846 - 8406
Clean Water Specialist - Northwest	
Dan Steward	(218) 203 - 4474
Watershed PFM Coordinator	
Brainerd	(218) 203 - 4472
Chris Pierce	(218) 203 - 4477
Bemidji	(218) 755 - 2690
Mark Fischer	(218) 755 - 2693
Chad Severtz	(218) 755 - 2671
Duluth	(218) 723 - 4752
Erin Loether	(218) 723 - 4607
Detroit Lakes	(218) 846 - 8402
Pete Walter	(218) 846 - 8422
Brett Arne	(218) 846 - 8424
Central Region	
Karen Biglake - Manager	(651) 297 - 2996
Barbara Peichel	(651) 256 - 6268
Clean Water Specialist	
St. Paul	(651) 296 - 3767
Mary Peterson	(651) 296 - 0874
Steve Christopher	(651) 296 - 2633
Dan Kalban	(651) 332 - 0796
St. Cloud	(320) 223 - 7071
Brad Wincey	(320) 223 - 7072
Clean Water Specialist	
Jaxon Weierman	(320) 223 - 7074
Tara Ostendorf	
Southern Region	
Ed Lanz - Manager	(507) 766 - 5424
Mankato	(507) 344 - 2826
Jennifer Mucci-Johnson	(507) 344 - 2820
Jill Stockwell-Ebner	(507) 344 - 2926
Jeremy Maul	(507) 344 - 3524
Migri Hies	(507) 766 - 9818
Clean Water Specialist	
Marshall	(507) 537 - 6660
Jaxon Beckler	(507) 537 - 6615
Douglas Goodrich	(507) 537 - 6636
Rochester	(507) 296 - 2889
Adam Beilke	(507) 296 - 2992
David Copeland	(507) 296 - 2891
Shanna Kenealy	(507) 296 - 2889
Clean Water Specialist	

Central Office:
520 Lafayette Road North
Saint Paul, MN 55155
Phone: (651) 296-3767
Fax: (651) 297-5815
WWW.BWSR.STATE.MN.US



BWSR staff also around the state

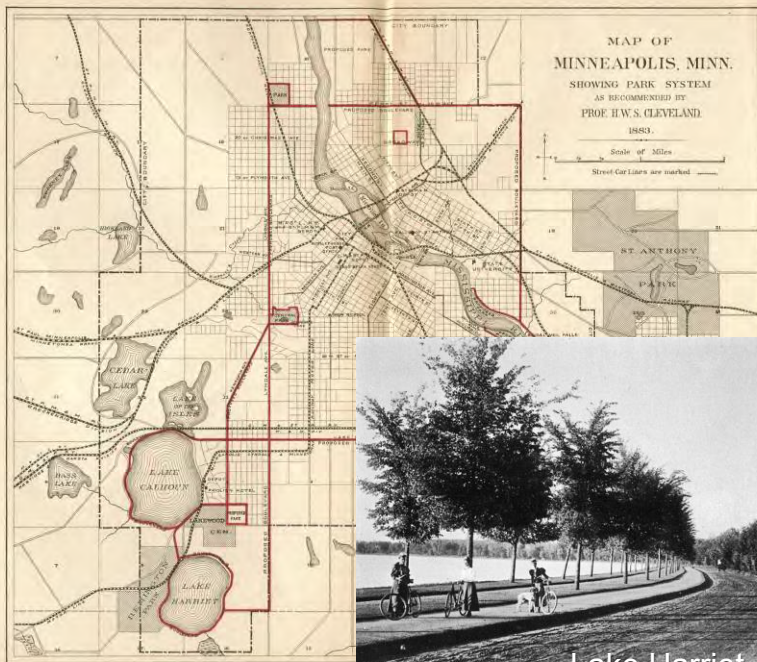
State & Watershed Approaches

- Forward-thinking Planning
- Enforcing Higher Standards
- State & Local Flood Risk Reduction Efforts
- Related Efforts & Future



Minneapolis Example

- 1883 – Minneapolis approved referendum to create a park board
- Landscape architect Horace Cleveland hired. His vision started with preserving park land along the Mississippi River gorge, the concept of connecting the lakes with scenic byways and along Minnehaha Creek to the Mississippi.
- Cleveland quote: *"Look forward a century, to the time when the city has a population of a million, and think what will be their wants."*



Lake Harriet - 1896



2014 - Flooded Park Lands & Golf Courses (Costs to repair & loss of revenue)



Source: Minnehaha Creek WSD

Mainly Public Infrastructure Damage

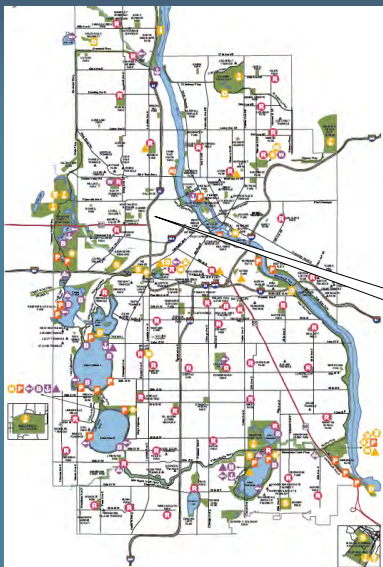


Landslide next to U of MN Hospital (closes road); Biggest repair expense in county



Photo source:
MNDNR EWR

July 15, 2014 Baseball All Star Game



- Held just weeks after record flooding in Minneapolis
- Most had no idea major flooding had occurred

Target Field

Public Water Permits

- 1897 – State law defined Public Waters
- 1930s - Dep't of Conservation, Division of Drainage began regulating public waters
- 1930s - Regulations for “changes to course, current or cross-section” of public waters
- Lots of controversy over:
 - Which basins
 - What was regulated



Reducing Flood Risk in MN

- Forward-thinking Planning
- **Enforcing Higher Standards**
- State & Local Flood Risk Reduction Efforts
- Related Efforts & Future



1960s – 1990s - Key Laws Affecting Floodplain

- 1969 Floodplain Management Law
- 1970 Shoreland Management Law
 - 1970: unincorporated areas
 - 1973: cities
 - Public watercourses added
- 1976: Public Waters Inventory Program
 - Class 3, 4, 5 wetlands & lakes (> 10 acres in unincorporated; > 2.5 acres in incorporated)
 - Watercourses with drainage of > 2 square miles
- 1987 Flood Damage Reduction (FDR)
- 1991: Wetland Conservation Act of 1991



Higher Floodplain Standards

Minnesota's had many higher floodplain management standards since the first State Rules were adopted in 1970. Some examples:

- 1 to 1.5 feet freeboard (1 foot plus any stage increase)
- Stage increase limited to 0.5 feet, AND no increased damage potential
- Most structures prohibited in floodway
- Many "optional" higher standards in state model ordinance are being adopted



1969 - Shoreland Management

Rules: counties (unincorporated areas) in 1970; cities in 1973

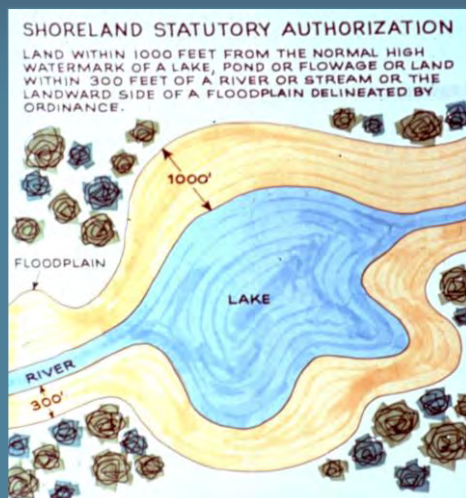
Structure setbacks
(50 – 150' from OHWL*
and 30' from bluff line)

*Ordinary High Water
Level is official boundary



Vegetation
management,
Aesthetics / screening

MN's Changes (vs WI version)



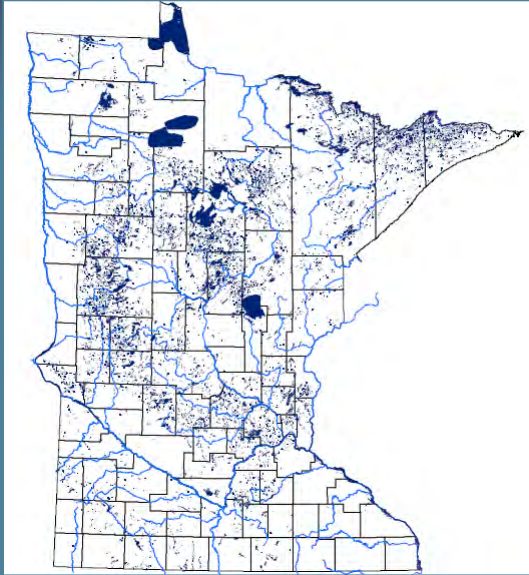
Minimum Elevations:

Have minimum lowest
floor elevations in
"shoreland districts."

Lake Classifications:

- Natural Environment
- Recreational
Development
- General Development

Where do the shoreland rules apply?



- Lakes:
 - > 25 acres in counties
 - > 10 acres in cities
- Rivers & Streams
 - > 2 sq mile drainage

Enforce Ordinance Now to Prevent Future Damage



Roseau, MN
June 12, 2002
(close to 500-yr)



Photos source:
MNDNR Forestry

MN Watershed Districts

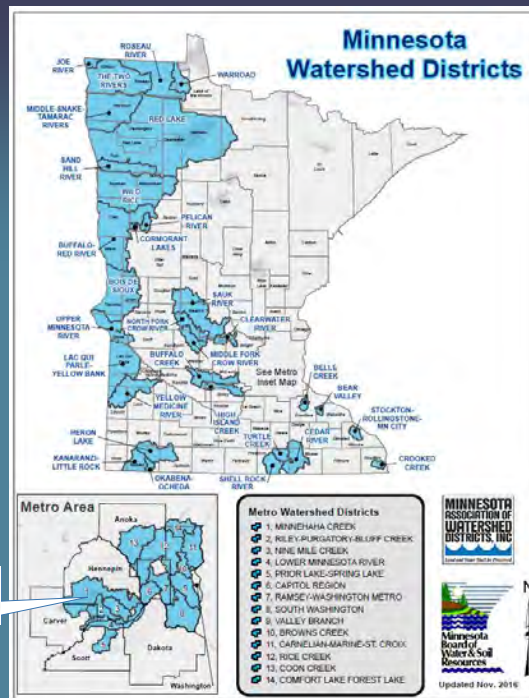
Watersheds have broad authority to:

- Adopt rules with the power of law to regulate, conserve, and control the use of water resources within the district
- Assess properties for benefits received and levy taxes to final district administration
- Contract with units of government and private and public corporations to carry out water resource management projects.



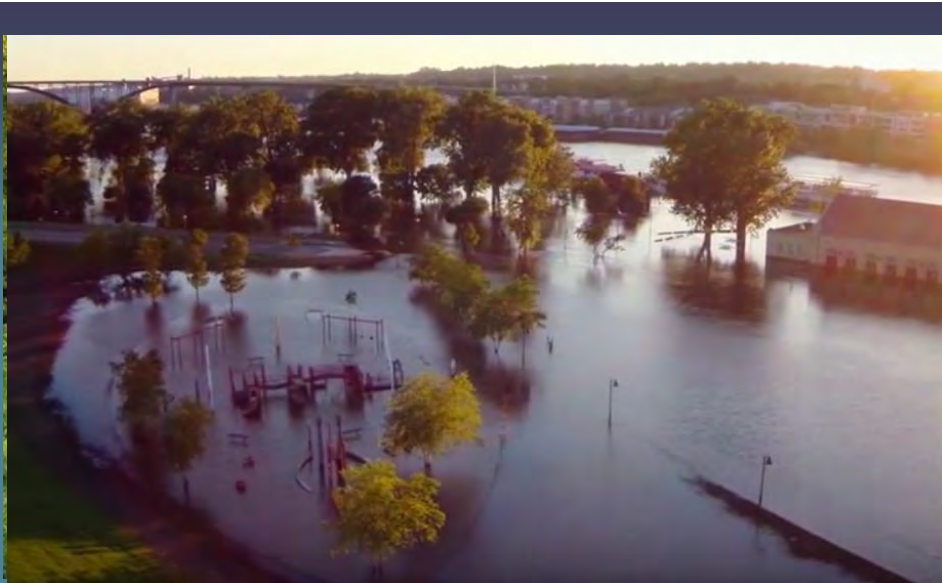
Accept grants; acquire property for projects

Watershed Districts



MINNEHAHA CREEK WATERSHED DISTRICT
 QUALITY OF WATER QUALITY OF LIFE





presented by

MINNEHAHA CREEK  **WATERSHED DISTRICT**
QUALITY OF WATER QUALITY OF LIFE

<https://www.youtube.com/watch?v=A0eXVqXYQfo>

Reducing Flood Risk in MN

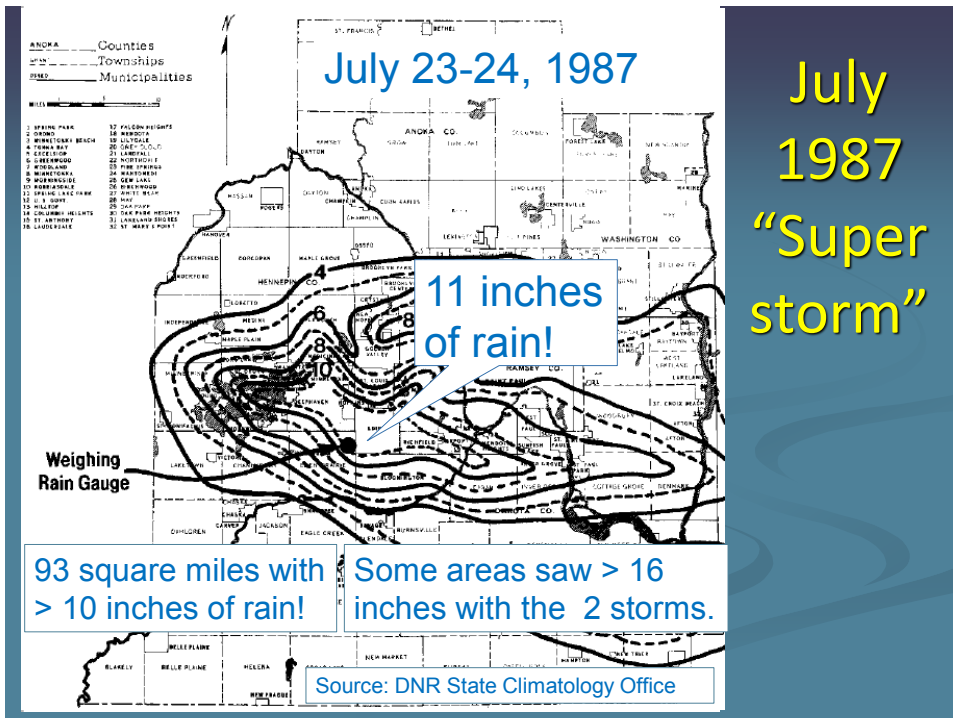
- Forward-thinking Planning
- Enforcing Higher Standards
- **State & Local Flood Risk Reduction Efforts**
- Related Efforts & Future



How are we Reducing Existing Risk? (And Some History)



45

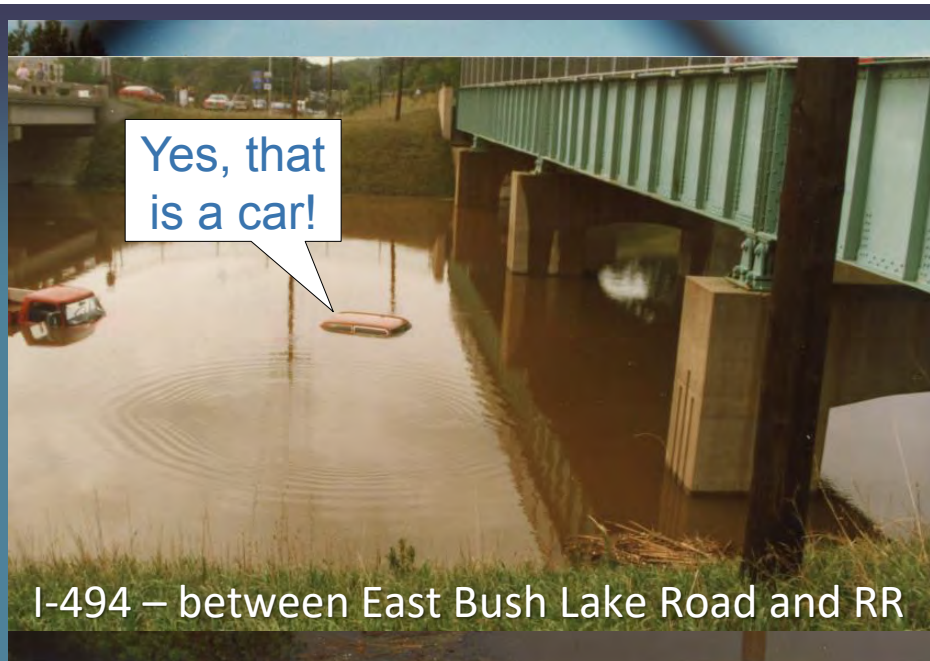


July
1987
"Super
storm"



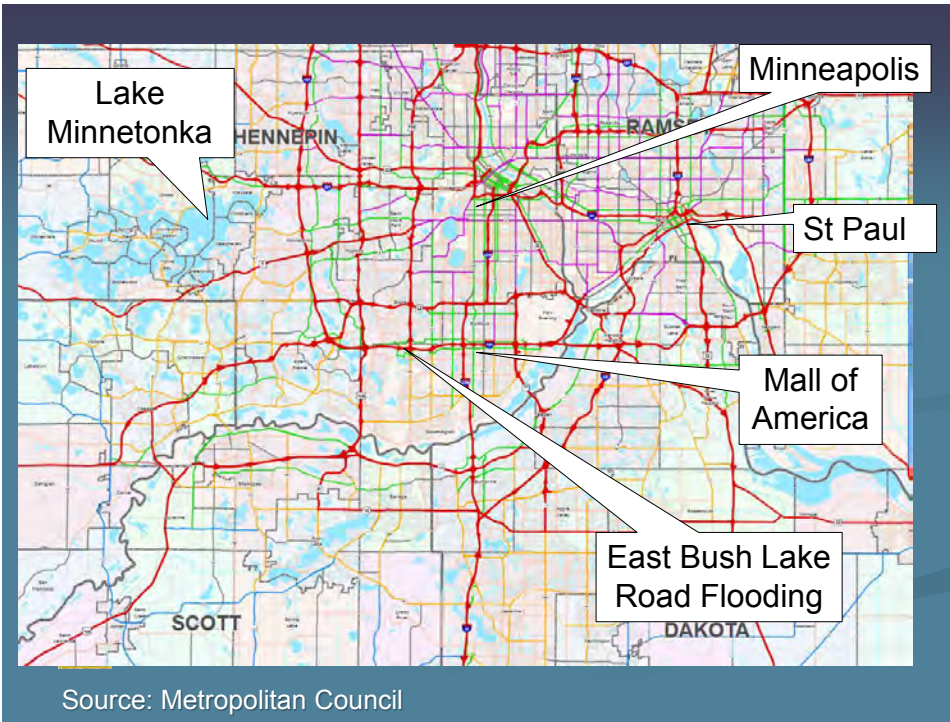
West 84th St at Nine Mile Creek crossing
(toward 8500 Normandale Lake Blvd Tower)

Photo source: City of Bloomington



I-494 – between East Bush Lake Road and RR

Photos source: City of Bloomington



1987 - Flood Damage Reduction (FDR)

Over 3,500 structures removed from floodplain
(with FDR assistance)

Large Flood Control
Structures



East Grand
Forks: Set back
levee; many
buyouts



Acquisitions



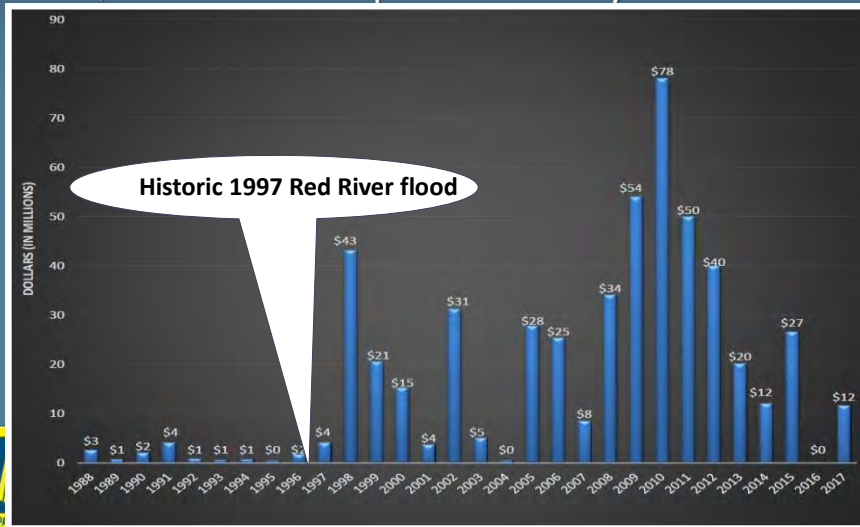
Ring Dikes

Red River Valley:
Over 215 ring dikes
1998 to present;
~ \$4.9 Million FDR



Funding History for Minnesota's Flood Damage Reduction Grant Program

\$523.9 million - predominantly bond funds



Cost Share

- Basic program cost share requires 50% local participation
- For projects receiving federal funding, typically the feds pay 75%, the state 12.5%, and the local sponsor 12.5%. For federally-declared disasters, the state has been providing the entire local share.
- Rider language in the past several bonding bills have limited the local share for municipalities to a cost not greater than 2% of the median household income for the municipality x the number of households in a municipality. Latest U.S. census demographics used to calculate this local share.



Partnering for better projects, efficient funding



Other State & Local Funding

- Locals raise cost share in many ways:
 - City sales tax
 - Property tax assessments on benefitting properties
 - Watershed District levy or assessment (“other” on property taxes)
- State often pays the 25% for non-federal Public Assistance (PA) share
- 2014 legislature set aside \$3 Million to start disaster fund



Top Flood Insurance Claim Communities

Community Name	Losses	Total Payments	% of State Claims
East Grand Forks, City Of	1,069	33,093,100	23.3%
Austin, City Of	648	9,006,509	6.3%
Clay County *	729	8,889,823	6.3%
Breckenridge, City Of	449	7,226,202	5.1%
Moorhead, City Of	560	4,569,353	3.2%
Rochester, City Of	662	4,208,914	3.0%
Polk County *	270	3,218,669	2.3%
Marshall County*	519	3,133,814	2.2%
Roseau, City Of	241	2,930,553	2.1%
Northfield, City Of	24	2,640,376	1.9%
Warren, City Of	552	2,277,199	1.6%
Kittson County *	191	2,165,962	1.5%
Norman County*	188	2,135,549	1.5%
Bayport, City Of	135	1,950,893	1.4%
Owatonna, City Of	78	1,943,922	1.4%
Montevideo, City Of	131	1,764,431	1.2%
Granite Falls, City Of	130	1,675,621	1.2%



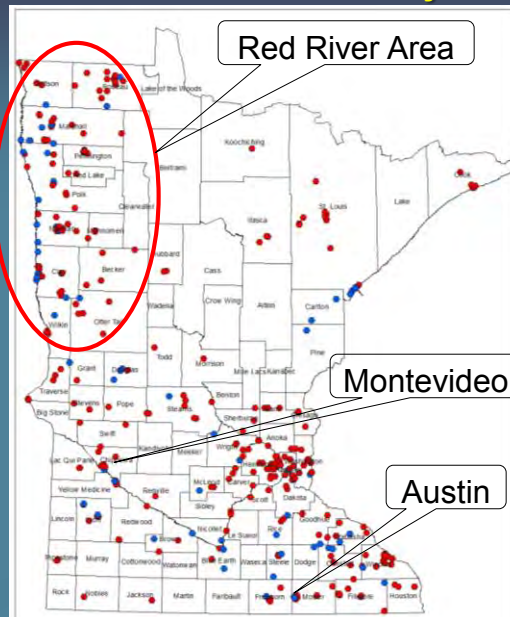
Minnesota Flood Risk Reduction Projects

1987 – 2013:
285 Completed &
72 In-Progress
(as of 10/4/2013)

~85% of
funding in Red
River Valley

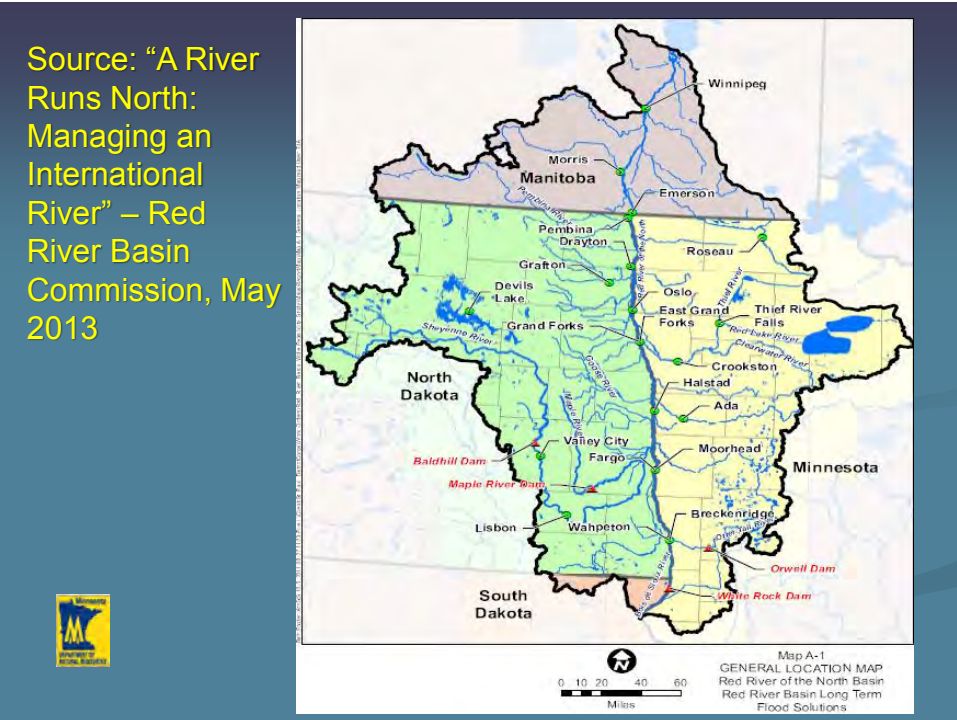


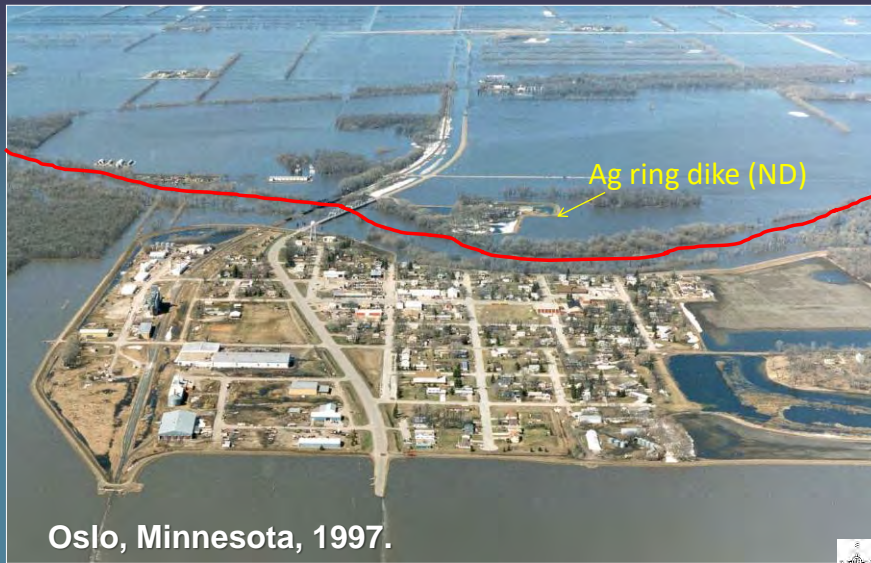
- Complete
- In-Progress





Source: "A River Runs North: Managing an International River" – Red River Basin Commission, May 2013





Oslo, Minnesota, 1997.

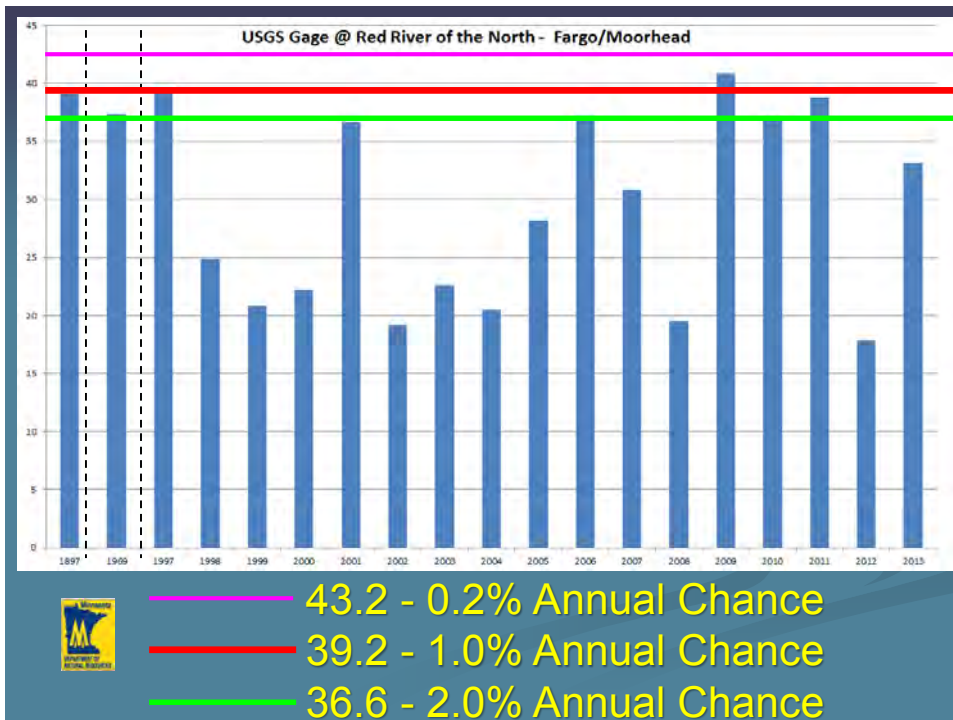
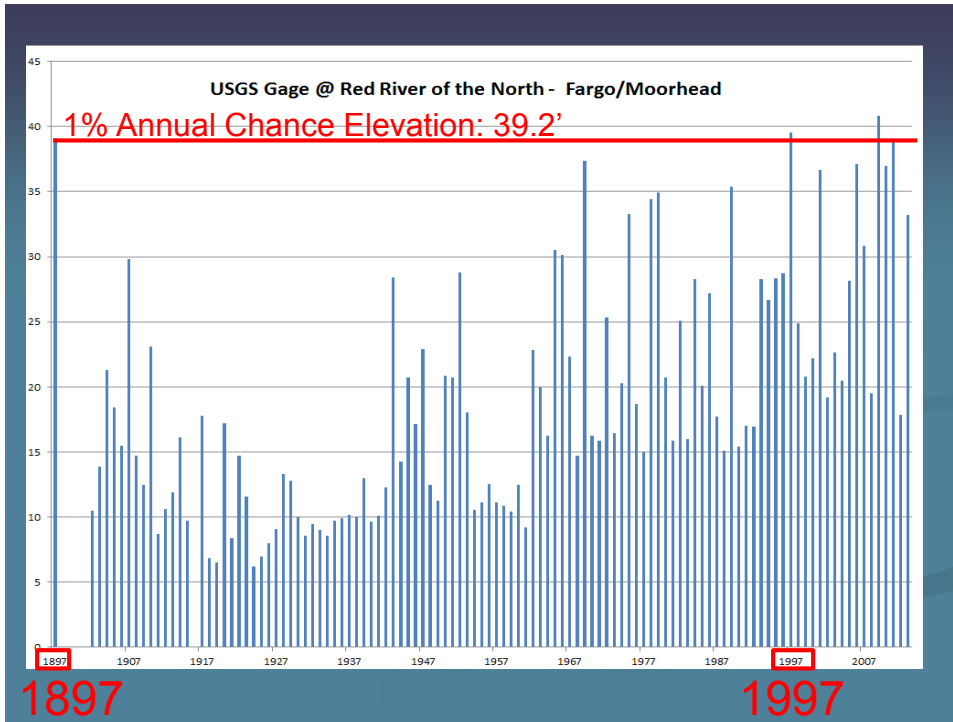


This flood event spurred efforts for greater commitment to flood protection throughout MN

\$72M cumulative damages prevented - COE 2014



Red River of the North Flood of 1897



East Grand Forks



- Strategic buyouts
- Smaller levees
- Great Public Information



Moorhead

Property Information

This is an [interactive GIS map](#) that allows users to access and query property information and different layers of City of Moorhead information. Current and historical aerial photography are available, including aerial photos of flood crests from the latest major floods.



Current FEMA FIRM

This is an [interactive GIS map](#) displaying the current FEMA Floodway, 100 year and 500 year floodplains. You can search by property address to view and print a detailed map showing how the 100 year floodplain (SFHA) may affect your property and any structures on the property.



Flood Stage Information

This map provides information on Red River flood stage levels that may affect properties and structures in the City. These 1/2 foot river flood stages were derived from LIDAR data acquired in May of 2011.

- Blue areas show river flooding
- Red areas reflect the protected areas that benefit from the City's flood mitigation projects completed since the spring of 2009
- Emergency protection measures, such as temporary day levees, are also represented as protected areas in this interactive web map.



Disclaimer: This map information is made available as a public service, and is to be used for reference purposes only. The City of Moorhead, MN, makes no representation or warranties, express or implied, with respect to the

Source: City of Moorhead site, 2015

Before **After** **Moorhead, MN**

Source: City of Moorhead

Table 1: Sources of Moorhead Mitigation Project Funding

State Flood Hazard Mitigation Grants	\$72.70M
Federal HMGP Grants	\$0.25M
MnDOT Cost-Share	\$0.08M
Local	\$32.25M
TOTAL	\$105.28M

Table 2: Local Funding Sources to Pay General Obligation Improvement Bond

Special Assessment Collections	20%
Water Utility Transfer	9%
Wastewater Utility Transfer	12%
Stormwater Utility Transfer	14%
City Capital Improvement Fund Transfer	28%
General Property Tax Levy	17%

City of Moorhead Flood Insurance Claims

Year	Flood Stage	Claims Paid
1997	39.57	\$2.22 Million
2009	40.84	\$1.45 Million
2011	38.81	\$0.87 Million

39.2 = 1% Annual Chance Flood Elevation



Austin, MN

- By 2001, city acquired over 160 homes with \$1.7 M from federal grants (75%/25%).
- 2006 – voters approved half cent sales tax to expire in 2016.
- Used \$5 M federal, \$3 M state and local sales tax funds for:
 - 1,700' levees
 - 740' floodwall
 - 7 gated structures.



Source: City of Austin

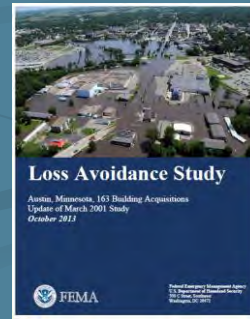
Montevideo Minnesota (2001)



- 63 structures removed from the floodplain after 1997 flood (voluntary acquisition)

Returns on Investment

- 3.18 in Moorhead for 27 acquisitions
- 7.47 in Montevideo for 48 acquisitions
- 2.65 in Austin for 165 acquisitions
(2013 update)



Other Savings



April 1997



After Buyouts

Granite Falls, MN



Reducing Flood Risk in MN

- Forward-thinking Planning
- Enforcing Higher Standards
- State & Local Flood Risk Reduction Efforts
- **Related Efforts & Future**



2008 Clean Water Land & Legacy Amendment




"In 2008, Minnesota voters took a bold and historic action by imposing a three-eighths of one percent tax on themselves for 25 years, until 2034, in the name of cleaner water, healthier habitat, better parks and trails and sustaining our arts and cultural heritage."



<http://www.dnr.state.mn.us/legacy/index.html>

Find projects near you

Search by city, zip or address for nearby projects 

Note: Location data was recently added to the site. Projects will be added to the map as data is collected.

Allocations by Fund
Based on FY 2010 - FY 2017 appropriations. [Learn more about the funds.](#)

Fund Name	Amount	Fund Type
Arts & Cultural Heritage Fund	over \$441 million	LEGACY FUND
Clean Water Fund	over \$759 million	LEGACY FUND
Outdoor Heritage Fund	over \$741 million	LEGACY FUND
Parks & Trails Fund	over \$317 million	LEGACY FUND
Environment & Natural Resources Trust Fund	over \$253 million	TRUST FUND

[About the fund](#) [About the fund](#) [About the fund](#) [About the fund](#) [About the fund](#)



www.legacy.leg.mn



Since 1988:
40% of net
State Lottery
proceeds

Dam Removals & Stream Restoration



Chippewa River
example



Photos:
MnDNR
(Jenzen)



Buffalo River Channel Restoration



- Added 1710' river length & reconnected with FP
- Included riffle pools & deep pools
- Road removed
- Key coordination & local \$ from Buffalo-Red River WSD & City of Hawley

WHAF

- WHAF Home
- About the Science of Watershed Health
- Explore Watershed Health Assessments
- Key Concepts

Watershed Health Assessment Framework

The Watershed Health Assessment Framework (WHAF) provides a comprehensive overview of the ecological health of Minnesota's watersheds. By applying a consistent statewide approach, the WHAF expands our understanding of processes and interactions that create healthy and unhealthy responses in Minnesota's watersheds. Health scores are used to provide a baseline for exploring patterns and relationships in emerging health trends.



ABOUT
The Science of Watershed health

EXPLORE
Watershed Health Assessments

KEY CONCEPTS
Watershed Health and Systems Management

Contact for feedback: WHAF.DNR@state.mn.us

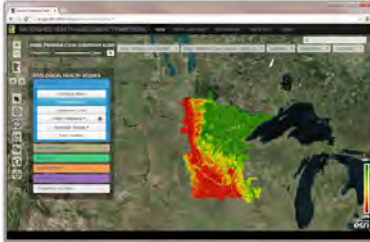
[Home](#) > [Assistance](#) > [Natural resource planning](#) > [Regional and state tools](#) > [Watershed Health Assessment Framework \(WHAF\)](#) >

WHAF
[WHAF Home](#)
[About the Science of Watershed Health](#)
[Explore Watershed Health Assessments](#)
[Key Concepts](#)

Explore: Watershed Health Assessments

View health scores, natural resource features and summary information about Minnesota's watersheds.

Find health scores at many scales: statewide, river basin, watershed, and catchment. See what's upstream, view the location of natural and man-made features. Explore your watershed to discover health trends and new connections.



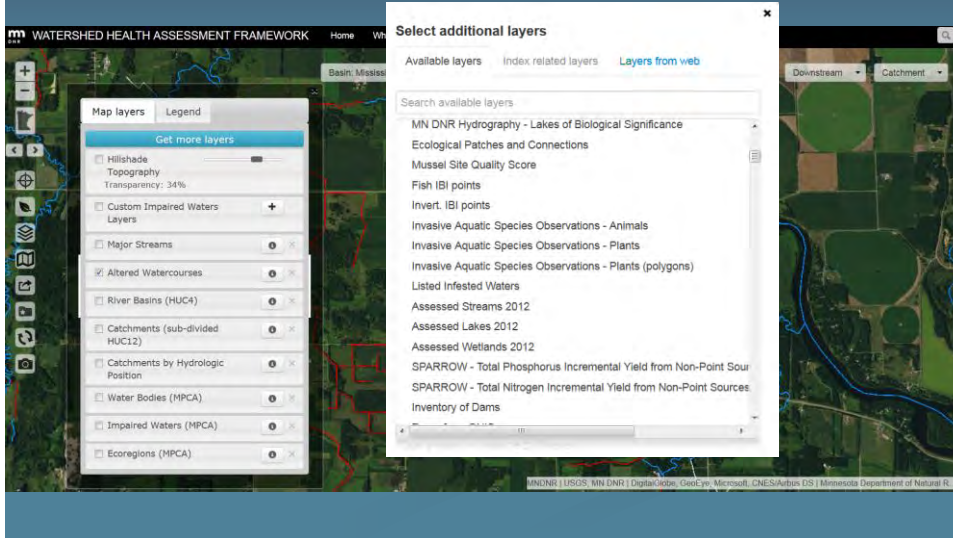
Explore Watershed Health

Map Instruction Video Series:
 Narrated 3-4 minute videos will open in YouTube

- [Video 1 - Navigating the Map](#)

Lots of videos and user handouts

Interactive Watershed Health Assessments Map



Map layers | Legend

Get more layers

- Hillshade
- Topography
Transparency: 34%
- Custom Impaired Waters Layers
- Major Streams
- Altered Watercourses
- River Basins (HUC4)
- Catchments (sub-divided HUC12)
- Catchments by Hydrologic Position
- Water Bodies (MPCA)
- Impaired Waters (MPCA)
- Ecoregions (MPCA)

Select additional layers

Available layers | Index related layers | Layers from web

Search available layers

- MN DNR Hydrography - Lakes of Biological Significance
- Ecological Patches and Connections
- Mussel Site Quality Score
- Fish IBI points
- Invert. IBI points
- Invasive Aquatic Species Observations - Animals
- Invasive Aquatic Species Observations - Plants
- Invasive Aquatic Species Observations - Plants (polygons)
- Listed Infested Waters
- Assessed Streams 2012
- Assessed Lakes 2012
- Assessed Wetlands 2012
- SPARROW - Total Phosphorus Incremental Yield from Non-Point Sour
- SPARROW - Total Nitrogen Incremental Yield from Non-Point Sources
- Inventory of Dams

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Watershed approach to restoring and protecting water quality

The MPCA enforces a watershed approach to restoring and protecting Minnesota's rivers, lakes, and wetlands. It uses a watershed approach to monitor, assess, and restore impaired waters, and to protect unimpaired waters from becoming impaired.

There are 32 major watersheds in Minnesota. Intensive water quality monitoring and assessments will be conducted in each of these watersheds in key watersheds.

During the next year, the MPCA will be conducting a pilot program in each of the 32 major watersheds to assess water quality, assess and protect riparian areas, and determine what is needed to restore or protect water quality. This watershed approach is a comprehensive, multi-step process.

The primary focus of the watershed approach is to focus on the watershed's condition as the starting point for water quality restoration planning, implementation, and measurement of results. The approach may be modified to meet site-specific needs or to address other water quality issues, and program's compliance (e.g., TMDL implementation).

Intensive Watershed Monitoring

Major Watersheds

- 1000
- 2000
- 3000
- 4000
- 5000
- 6000
- 7000
- 8000
- 9000
- 10000
- 11000
- 12000
- 13000
- 14000
- 15000
- 16000
- 17000
- 18000
- 19000
- 20000
- 21000
- 22000
- 23000
- 24000
- 25000
- 26000
- 27000
- 28000
- 29000
- 30000
- 31000
- 32000

Watershed Restoration and Protection Strategy (WRAPS)

Began in 2008.
Legislature directed watershed approach.

Money to accelerate efforts to monitor, assess, and restore impaired waters, and to protect unimpaired waters was funded by MN's Clean Water Legacy Act

For details see [MN Pollution Control Agency site](#)

One Watershed One Plan

Comprehensive Water Management on Watershed Scale

2012 Legislature authorized BWSR

[More Details on BWSR site](#)

Water Planning Timeline

- 1937 – MN Soil Conservation Law
- 1938 – MN's 1st Soil & Water Conservation District formed
- 1955 - MN Watershed Act
- 1957 – MN's 1st Watershed District
- 1982 - MN Metro Surface Water Mgt Act
- 1985 – County Water Planning Act
- 2012 – 1W1P legislation passed
- 2013-2014 – 1W1P Program Development
- 2015 – Comprehensive Watershed Management Planning legislation passed

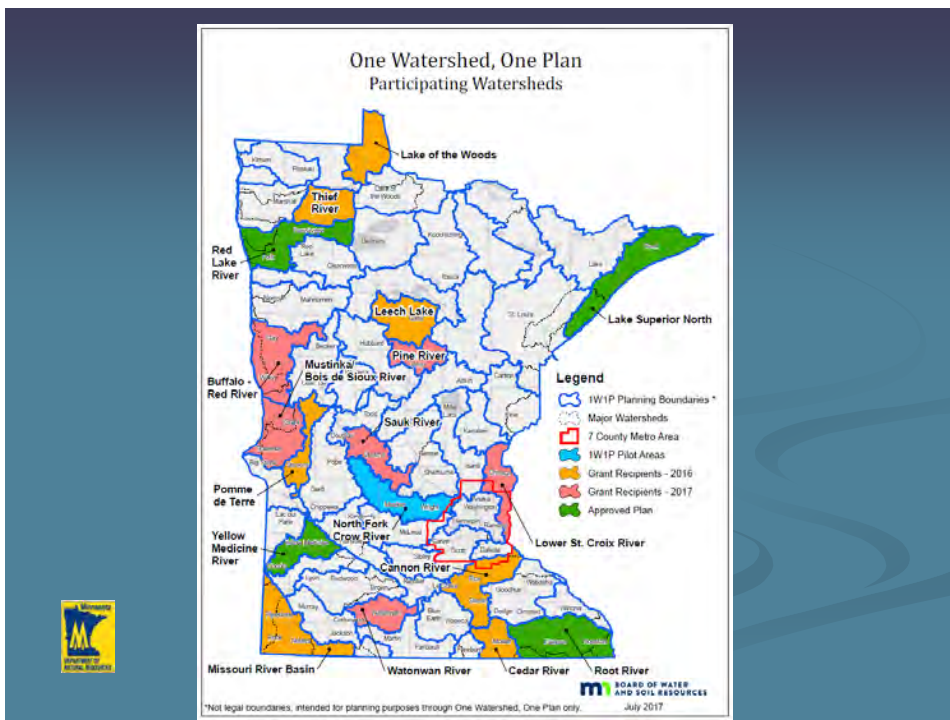
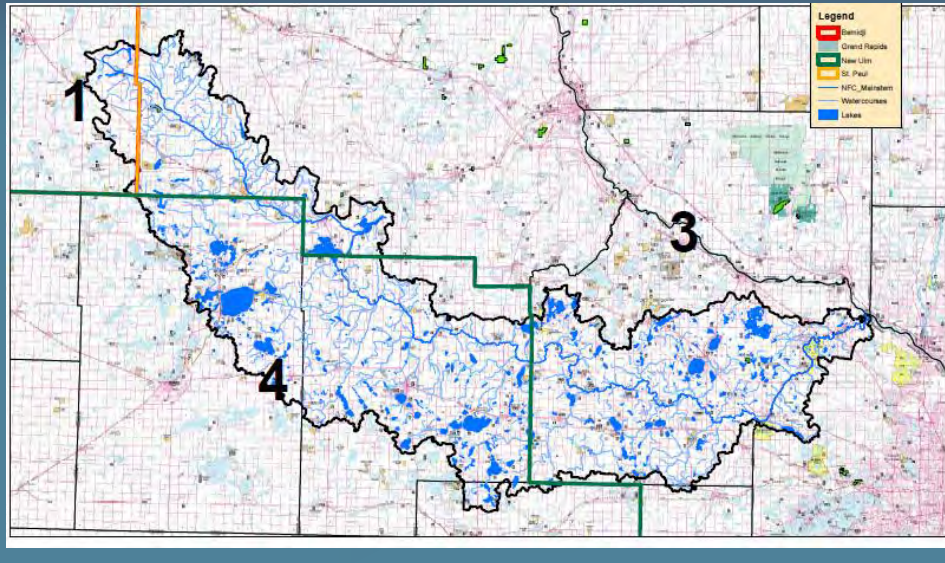


One Watershed One Plan

- 5 pilots watersheds selected
- Multiple areas of state
- Wrote watershed-based plans 2015 - 2016
- Prioritized, targeted, measured



North Fork Crow River Example: Talk about too many plans to count...



Governor's Buffer Initiative – Winter 2015

- Championed by Governor Mark Dayton as a water quality initiative
- Concept arose at Pheasant Summit
- Recognizing:
 - Buffers are good
 - Current regulations complicated and not consistently enforced
- Original concept was permanent vegetation buffers on all waters of the state; Final bill was compromise



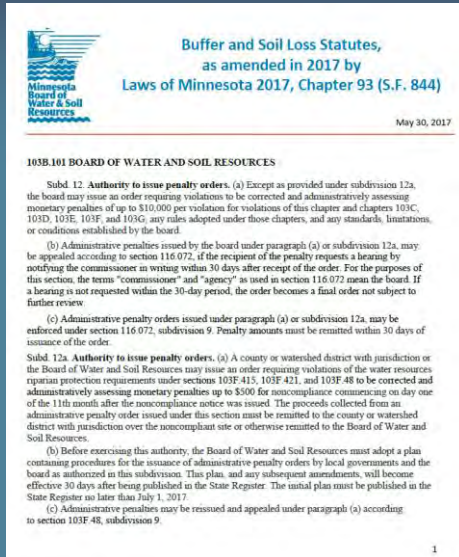
Purposes of New Buffer Law (MS. 103F.48)

Establish riparian buffers and water quality practices to:

- protect state water resources from erosion and runoff pollution,
- stabilize soils, shores, and banks, and
- protect or provide riparian corridors.



Law Updated in 2017



See this copy of amended law and lots more details at [MN Board of Water & Soil Resources web site](http://www.mn.gov/boards/boards/water-soil-resources)

Existing Buffer Requirements

Buffer Type	Required Buffer Width	Triggered by:
Shoreland Buffer Requirement	Ag Areas: 50 feet Non Ag Areas: Shore Impact Zone (25-100 feet)	DNR shoreland classification and adoption of local shoreland ordinance
Public Ditch Buffer Requirement	16.5 feet	Establishment, construction, improvement, redetermination of benefits

Buffer Analysis Results For 67 counties with > 30% cropland (BWSR, 2014)

Riparian classification	Linear miles	% Total stream/Ditches	Buffer required (feet)
Shoreland Requirement	21,642	30%	50.0
Public Ditch Buffer Requirement	4,022	6%	16.5
No Buffer Requirement	44,850	64%	0.0

Buffer Requirements – Public Waters

Landowners owning property adjacent to a waterbody identified and mapped on a buffer protection map must maintain a buffer to protect the state's water resources as follows:

- for all **public waters**, the more restrictive of:
 - a 50' average/30' minimum width, continuous buffer of perennially rooted vegetation; or
 - the state shoreland standards; or
 - an alternative water quality practice may be used if the property is farmed.



Buffer Requirements – Public Drainage Systems

Landowners owning property adjacent to a waterbody identified and mapped on a buffer protection map must maintain a buffer to protect the state's water resources as follows:

- for public drainage systems, a 16.5' minimum width continuous buffer of perennially rooted vegetation on ditches within the benefited area of public drainage systems; or
- an alternative water quality practice if the property is farmed.



Buffer Requirement Exemptions

- Land enrolled in the federal Conservation Reserve Program (CRP)
- Public or private water access or recreational use areas
- Areas covered by a road, building or other structures
- Municipalities or others in compliance with federal and state storm sewer or stormwater law (MS4 communities)
- Temporary non-vegetated condition due to drainage tile installation and maintenance, seeding, conservation project construction



State financial commitments (next 2 yrs; 2015 slide)

- Clean Water Fund:
 - \$22M - SWCD Local Capacity
 - \$ 5M - for Buffer Compliance Assistance
 - \$33M - Long Term Water Quality Protection (RIM, CREP)
 - \$20M - Projects and Practices Grants
 - \$12M - Targeted Resource Protection and Enhancement
 - \$1.5M Conservation Drainage
- Outdoor Heritage Fund: \$4.5M for buffers for wildlife and water quality
- Environmental and Natural Resource Trust Fund: \$1M for Farm Bill Assistance Program



Roles in Implementation: What to Expect

- DNR to complete buffer protection maps
- BWSR to provide program implementation policy and guidance
- SWCDs primary local government, including assisting landowners and implementing excessive soil loss
- DNR to provide guidance and support on local shoreland ordinance administration
- LGUs are encouraged to update – or adopt – shoreland ordinances



[See BWSR site for more details](#)


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Buffer Mapping Project



Minnesota's Buffer Protection Map

[Buffer Map](#)
[Statewide Data Layer](#)

Minnesota's buffer law establishes new perennial vegetation buffers of up to 50 feet along rivers, streams and ditches that will help filter out phosphorus, nitrogen and sediment. The law

Common buffer questions

Click on questions below to show answers. Click again to hide.

- What are Public Waters?
- How are Public Waters mapped?
- Why aren't all wetlands shown on the buffer map?

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Shoreland Management Program

- [Program Overview](#)
- [Shoreland Management Lake Classifications](#)
- [Guide for Buying and Managing Shoreland](#)

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- [LakeFinder](#)
- [Recreation Compass](#)
- [Groundwater](#)

Shoreland Management Program

Program Purpose

Minnesota Rules 6120.2500 - 3900

This program provides the backbone of statewide standards that local governmental units must adopt into their own land use controls to provide for the orderly development and protection of Minnesota's shorelands (both rivers and lakes). The DNR provides technical assistance to local governmental units in the adoption and administration of their shoreland controls. This involves planning and zoning assistance to local governmental units by DNR Area Hydrologists and Shoreland Management staff.

Model Buffer Language and Guidance

The DNR and the Board of Water and Soil Resources (BWSR) have developed model ordinance language and guidance for implementing the buffer law. Counties will have a selection of implementation options and model language that is simple, consistent, and complies with state law on buffers, shorelands, and public ditches:

- [BWSR and DNR: Guidance for Counties on Buffer-Related Ordinances](#) #99
- [BWSR Model Buffer Ordinance](#) #
- [DNR: Guidance and Model Language for Amending Buffer Law](#) #98
- [DNR Buffer Mapping Project](#)

Shoreland Model Ordinance

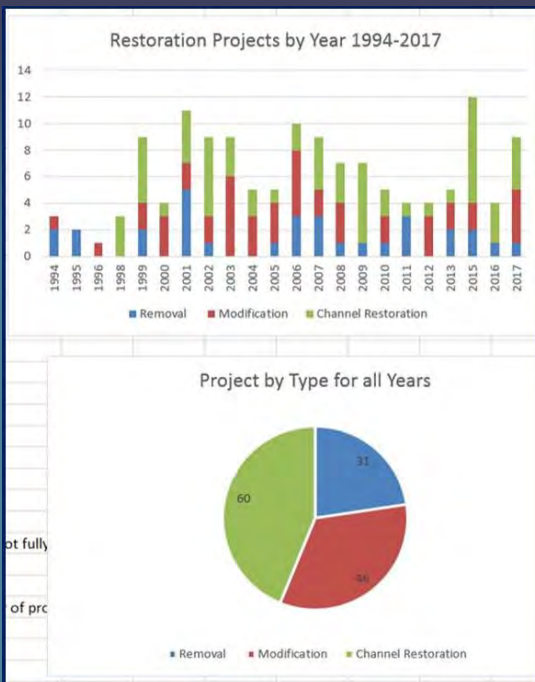
In January 2017, the DNR updated the Shoreland Model Ordinance. The model is intended to be used by local units of government as a reference when developing new shoreland ordinances or amending existing ordinances.

January 2017 – updated Shoreland model ordinance

DNR River Ecology Unit

- Studying rivers/data collection/research
- Restoration projects and dam removals
- Offer River Health & Restoration Workshops
- Educational/Outreach materials
- Watershed Health Assessment Framework

[DNR River Ecology Unit home page](#)



Stream Restorations (60) & Dam Removals (31) / Modifications (46) since 1994

River Health & Restoration Workshops



The foundation of these workshops is to:

- teach the fundamentals of stream science including: fluvial geomorphology, hydrology, connectivity, biology, and water quality and
- educate attendees in natural channel design techniques and approaches that ensure long-term health and stability.

Spring 2018 we are offering the following workshop:

- *The Ditching Dilemma*, March 19-21 in Blue Earth MN.

Summer 2018 workshops will be announced by January 2018.

For questions contact [Amy Childers](#) or review the [Spring 2018 Workshop flyer](#) (PDF)

Workshops that the River Ecology Unit teaches:

River Science Series:



[Link to this page](#)

Encouraging “Floodplain Culverts” to Reduce Bridge Blowouts Like This



Photo source: MNDNR (Nyborg)

Floodplain Culverts

Person For Reference

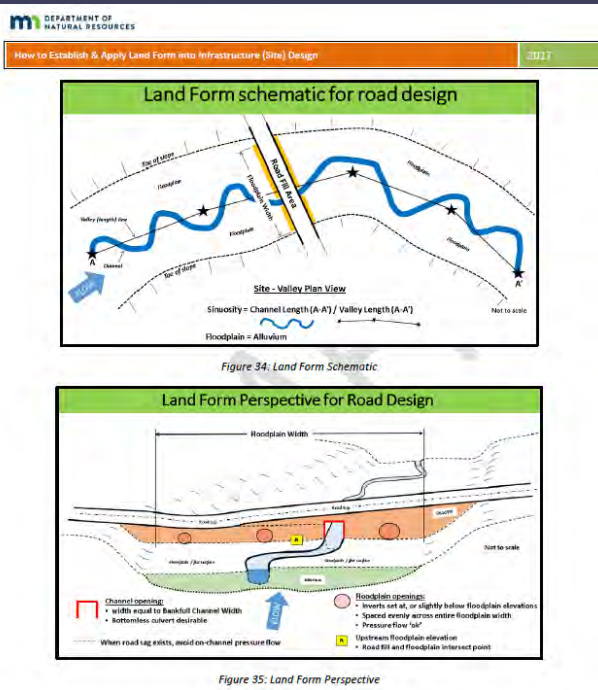


Example of floodplain culverts. Note main channel bridge, one floodplain culvert on the right and two floodplain culverts on the left. (Source: MNDNR)

August 29, 2017: FEMA determined Letters of Map Revisions using floodplain culverts exempt from review fee



[Geomorphic Approach to Infrastructure Design at Road/River Intersections page link](#)



2017 – New Design Guidelines (48 pages)

Questions?

ceil.strauss@state.mn.us
651-259-5713



NFFA Webinars



Natural Floodplain Functions Alliance (NFFA)
Webinars

<http://www.aswm.org/watersheds/natural-floodplain-function-alliance>

-OR-

<http://bit.ly/243JqTp>