



Red River Watershed Management Board

# PROJECT CATALOG

**MINNESOTA RED RIVER BASIN**

**FLOOD DAMAGE REDUCTION PROJECTS**

*A catalog of Flood Damage Reduction and Natural Resource Enhancement Projects in Minnesota Developed, Proposed and Planned under the 1998 Flood Damage Reduction Mediation Agreement*

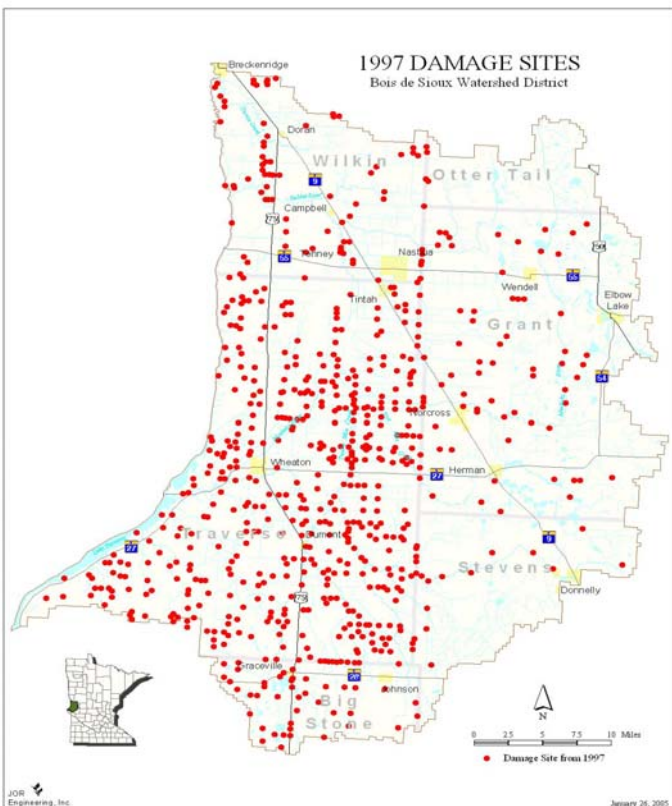
*February 2008*

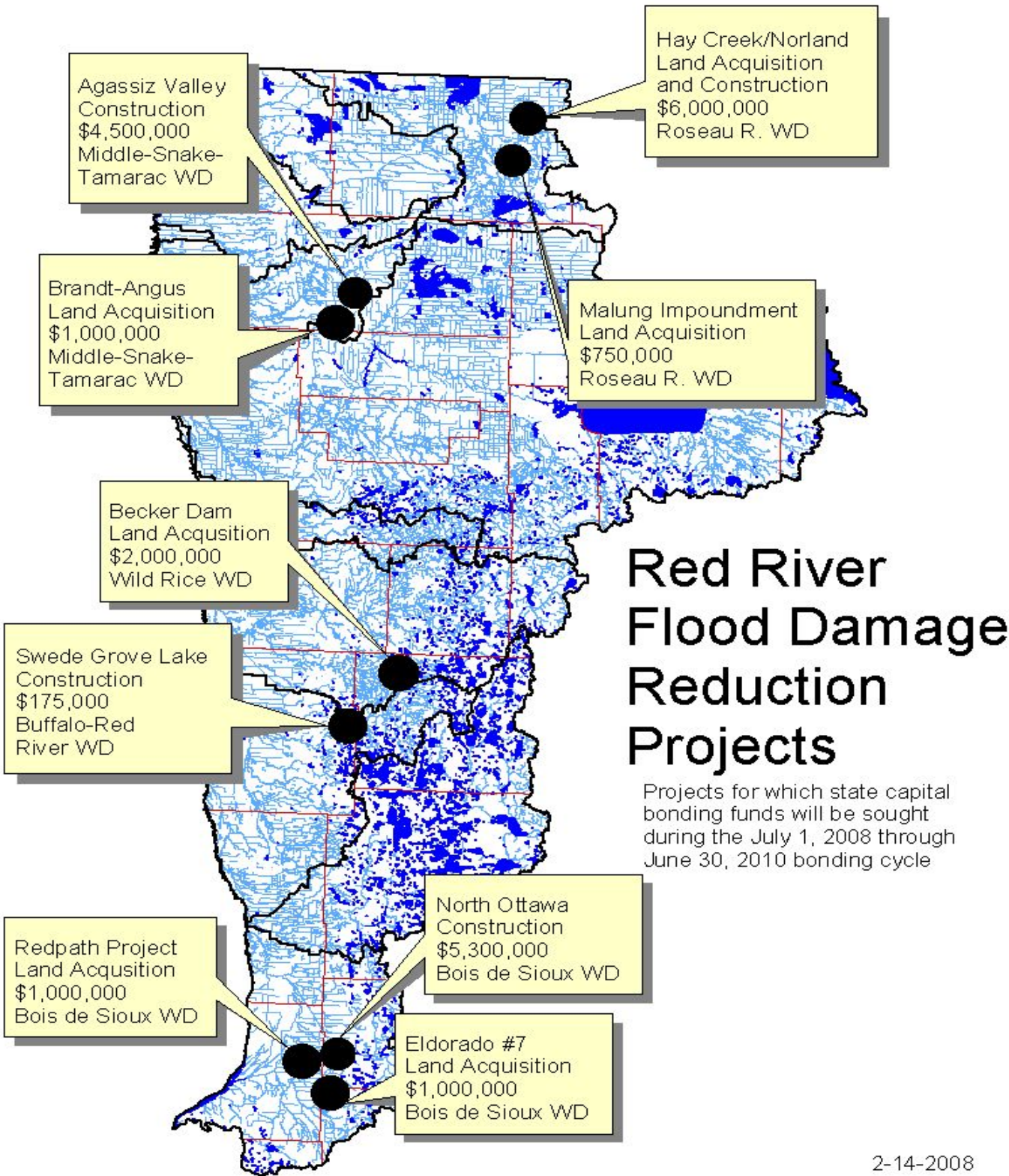
# ***CONTENTS***

<b>FLOODING PHOTOS</b> .....	3
<b>MAP OF BASIN FLOOD CONTROL/NATURAL RESOURCE PROJECTS</b> .....	4
<b>PROJECTS REQUESTING CAPITAL BONDING FUNDS (\$21,725,000)</b> .....	5
Agassiz Valley (Middle-Snake-Tamarac Rivers WD, \$4,500,000) .....	6
Hay Creek / Norland (Roseau River WD, \$6,000,000) .....	7
North Ottawa Impoundment (Bois de Sioux WD, \$5,300,000) .....	8
Brandt Angus (Middle-Snake-Tamarac Rivers WD, \$1,000,000) .....	9
Malung (Roseau River WD, \$750,000) .....	10
Eldorado 7 (Bois de Sioux WD, \$1,000,000) .....	11
Redpath (Bois de Sioux WD, \$1,000,000) .....	12
Upper Becker Dam Enhancement (Wild Rice WD, \$2,000,000) .....	13
Swede Grove Lake (Buffalo-Red River WD, \$175,000) .....	14
<b>GENERAL FUND REQUESTS, (\$845,000)</b> .....	15
Red River Basin Mapping Initiative (\$600,000) .....	16
Farmstead Ring Dike Program (\$245,000).....	17-18

# Floods

## Roads, Cities, Infrastructure, Farmsteads, & Crops





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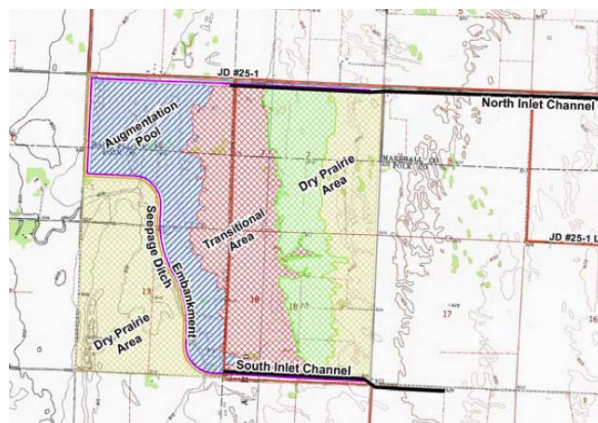
**PROJECTS  
REQUESTING  
CAPITAL  
BONDING  
FUNDS**

## Agassiz Valley Water Management Project

**Project Proposer:** Middle-Snake-Tamarac Rivers Watershed District

**Description/Location:**

This project is a multi-purpose project which combines flood control and environmental enhancement features. The project occupies four sections of land (2,560 acres) in **Marshall and Polk Counties**. The project occupies parts of four townships (McCrea & Comstock Townships in Marshall County and Brislet & Helgeland Townships in Polk County). The project will provide flood flow reduction from an area of approximately 33 square miles and provide environmental enhancement features.



Project Features  
Agassiz Valley Water Management Project

**Project Benefits:**

- Flood Control

Sufficient flood water storage (6,800 acre-feet gated and 3,800 ungated) will be provided to reduce flood flows to the area downstream of the site, to the Snake River and to the Red River of the North. The project will reduce the 100-year 10-day spring peak discharge from 873 cfs to 55 cfs a 94% reduction from the project area.
- Wetland/Prairie Restoration & Creation

Both wetlands and prairie will be restored and or created with the project. The primary emphasis will be on prairie restoration. For prairie restoration, approximately 400 acres are available outside the pool area and approximately 700 acres are available above the 10-year pool elevation.
- Maintain Tax Base

The site is being designed and is proposed to be managed to incorporate income-producing areas to maintain tax base for the local governments. If this can't be accomplished it is proposed to make a one-time payment in lieu of taxes to offset the loss of tax base.
- Wetland Research

The site will be made available for wetland research. If interest exists, wetlands will be constructed to provide controlled studies of the effects of bounce.
- Education & Recreation

Nature trails, observation blinds, kiosks, and hunting are included in the plan. In addition, educational programs are being developed with the local Audubon Chapter.
- Low Flow Augmentation.

Temporary storage will be provided for base-flow augmentation to the Snake River (2 cfs July thru August). An estimated 700 acre-feet of storage is proposed to be provided in the multi-purpose pool area for this.

**Estimated Cost: \$9,500,000                      State 75% (\$7.1M) / Non-state (\$2.4M)**

**Status:**

	Prior Years	FY 2009 (7/1/08-6/30/09)	FY 2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)	FY 2012 (7/1/11-6/30/12)
Approvals	WD,PT,WG,DNR,COE				
Funding	State \$2.6M RB/WD \$1.0M	State \$3.1M RB/WD \$1.0M	State \$1.4M RB/WD \$0.4M		
Construction	Acquisition	Construction	Construction	Completion	

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board and State of Minnesota FDR Program.

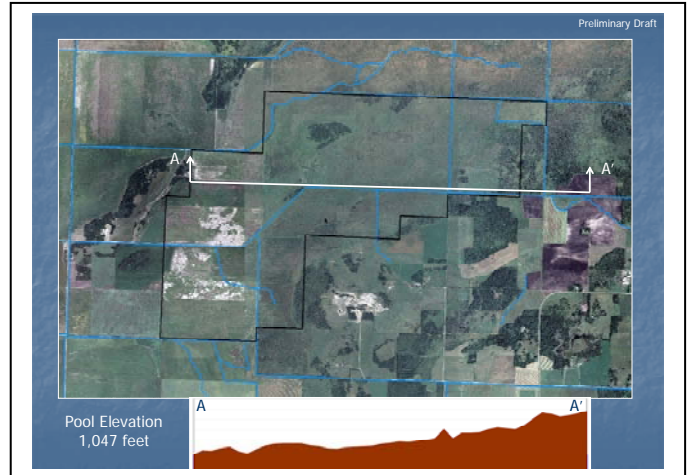
## Hay Creek-Norland

**Project Proposer:**

Roseau River Watershed District

**Description/Location:**

The project area includes the lower portion of the Hay Creek watershed and adjacent 37 square mile Norland sub-basin. Hay Creek drains into the Roseau River immediately downstream from the City of Roseau. The project will comprise three features: 7-mile corridor restoration and floodway enclosed by setback levees, a 3,000+ acre off-channel impoundment site, and a connection channel. This site will provide a total of at least 7,500 acre-feet of gated and un-gated runoff storage.



### *Project Benefits*

- Flood Control** 50% reduction in the 10-yr & a 30% reduction in the 100-yr discharges from Hay Creek/Norland drainage area. Reducing backwater and flood durations in the City of Roseau. Reducing flooding to 13,300 acres of ag land, 24 miles of roads, 131 miles of ditches, and 27 culverts and bridges.
- Habitat Restoration** Stream flow augmentation, improved dissolved oxygen levels, enhanced fish habitat, riparian buffer corridor and wetland restorations.
- Erosion Reduction** Reduction in riverbank erosion and bank sloughing on the Roseau River; buffers along the river and ditch and reduction in turbidity and suspended solids thereby improving water quality.

*Project Cost: \$8,900,000*

*State 75% (\$6.7M) / Non-state 25% (\$2.2M)*

**Status:** Proposed, under design

	Prior Years	FY 2009 (7/1/08-6/30/09)	FY 2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)	FY2012 (7/1/11-6/30/12)
Approvals	PT/WG/WD	RB/DNR/COE/WCA			
Funding	State \$0.7M RB/WD \$0.4M	State \$4.0M RB/WD \$1.0M	State \$2.0M RB/WD \$0.8M		
Construction	Acquisition	Construction	Construction	Completed	

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board and State of Minnesota Flood Damage Reduction Program.

## North Ottawa Impoundment Project

**Project Proposer:** Bois de Sioux Watershed District

**Description/Location:**

The impoundment will control 75 square miles of the 320 square mile Rabbit River Watershed in Grant and Otter Tail Counties by storing the excess runoff on 1,920 acres of land. The project involves constructing dikes around the perimeter of the impoundment area, building a collection system to bring water into the impoundment, and partitioning the interior to provide a complex of subimpoundments. Water carried by existing drainage ditches will be intercepted by diversion channels, and brought into the impoundment through a diked inlet channel. The impoundment will have 100% of its storage capacity available for the spring runoff. After spring runoff, the water will be released as quickly as possible to restore about 80% the impoundment's capacity. The remaining 20% will be drawn out slowly over the balance of the year while providing the secondary benefits.



**Project Benefits:**

**Flood Damage Reduction** (Primary objective): Provides 16,000 acre-feet of gate-controlled storage which is equivalent to 75% of the estimated 100-year spring runoff. This is expected to reduce peak flows on the Bois de Sioux River at Wahpeton/Breckenridge by about 5%.

**Downstream Flow Augmentation:** Release of about 5 cfs flow during the ice-free season in most years.

**Water Quality:** Improvement via sedimentation and nutrient uptake by wetland plants

**Habitat Enhancement:** Feeding and resting areas for migrating waterfowl and shorebirds and stream flow maintenance for downstream fish habitat.

**Problem Description:**

**Flooding:** Local - 10 to 15 square miles of ag land flooded frequently; Regional - Wahpeton/Breckenridge urban flooding; Farmstead - machinery and grain storage damage

**Erosion and Sedimentation:** Streambank and sheet erosion, streambed sedimentation.

**Other:** Loss of wildlife habitat due to intense agricultural activities

**Estimated Cost:** \$18,900,000      **State 75% (\$14.2M) / Non-state 25% (\$4.7M)**

**Status:** Under construction

	Prior Years	FY2009 (7/1/08-6/30/09)	FY2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)
Approvals	All			
Funding	State \$8.9M RB \$1.7M WD \$0.75M	State \$5.3M RB \$1.7M	RB \$0.55M	
Construction	Started Fall 2004	X	X	Completion

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board, State of Minnesota, Bois de Sioux WD, U.S. Fish & Wildlife Service, and Minnesota Department of Natural Resources.

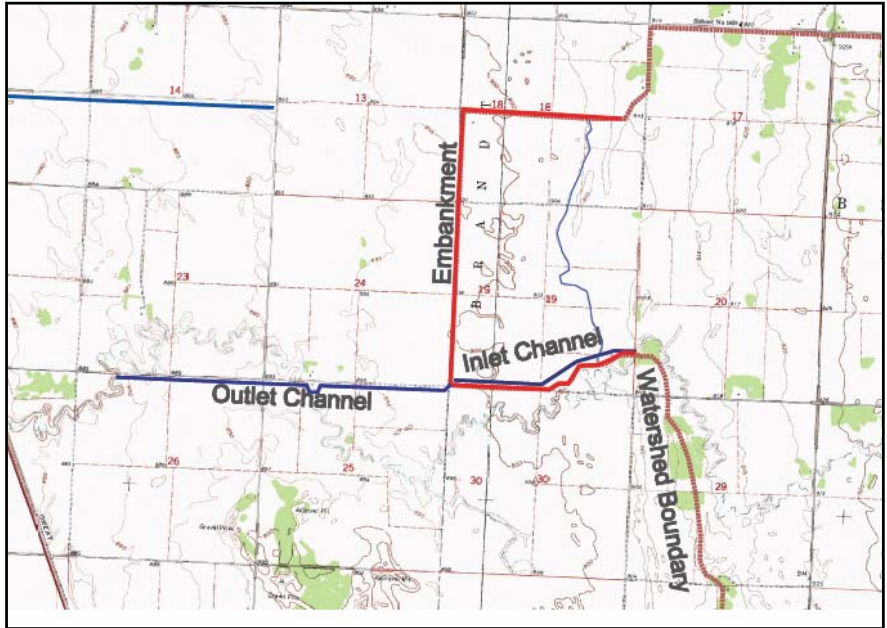


## Brandt-Angus Impoundment Project

**Project Proposer:** Middle-Snake-Tamarac Rivers Watershed District

**Description/Location:** This project is a multi-purpose off channel flood control project which combines flood control and environmental enhancement features. The project occupies approximately 1.5 sections of land (960 acres) in Polk County. The project will provide flood flow reduction from an area of approximately 11 square miles and provide environmental enhancement features such as wet prairies, stream restoration, and erosion reduction.

**Need Statement:** Frequent flooding in the Angus-Oslo subwatershed is a recurring problem for landowners and local governments. From Brandt Township to the Red River of the North, thousands of acres of farmland are flooded every 1-5 years during the growing season. Several miles of roads, bridges and ditches are damaged. The community of Angus, 4 rural residential structures, and approximately 18 square miles of agricultural land are contained within the flood damage area of the Brandt Angus Coulee area. There are 37 miles of township, county, and state roads, and some 30 related bridges and culverts damaged. Approximately 20 miles of legal ditches are damaged by the flooding problem. In 2005 and 2006, \$9,100 and \$52,373 were expended by Brandt and Angus Townships respectively to repair damaged roads and structures.



From Brandt Township to the Red River of the North, thousands of acres of farmland are flooded every 1-5 years during the growing season. Several miles of roads, bridges and ditches are damaged. The community of Angus, 4 rural residential structures, and approximately 18 square miles of agricultural land are contained within the flood damage area of the Brandt Angus Coulee area. There are 37 miles of township, county, and state roads, and some 30 related bridges and culverts damaged. Approximately 20 miles of legal ditches are damaged by the flooding problem. In 2005 and 2006, \$9,100 and \$52,373 were expended by Brandt and Angus Townships respectively to repair damaged roads and structures.

**Primary Purpose and Benefits:** The primary purpose is to reduce flood damages in the community of Angus, prevent damage to rural homes and structures, reduce the frequency of summer storm flooding of agricultural lands to a 1 in 10 year frequency, reduce the damages to roads, bridges, and culverts to a 1 in 10 year occurrence, and maintain/enhance the natural stream habitat in the Brandt Angus Coulee.

**Secondary Purpose and Benefits:** Secondary goals include reducing peak discharges, flood stages, and flood duration in the Brandt Angus Coulee area and along the Red River of the North. A 50% reduction in the 10-year and a 30% reduction in the 100-year peak discharges from the Brandt Angus Coulee area, contributing to the Red River via Judicial Ditch 75 (JD 75), could reduce peak flows from the entire Angus-Oslo subwatershed by up to 25% for the 10-year event and 10% for the 100 year event. A 10% reduction in ditch bank erosion and sloughing along JD 75.

**Estimated Cost:** \$3,800,000

**State 50% (\$1.9M) / Non-state 50% (\$1.9M)**

**Status:** Project Team working on details.

	Prior Years	FY 2009 (7/1/08-6/30/09)	FY 2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)	FY 2012 (7/1/11-6/30/12)
Approvals	WD,PT,WG,RB,	DNR, O			
Funding		State \$0.5M RB/WD \$0.5M	State \$0.5M RB/WD \$0.5M	State \$0.9M RB/WD \$0.9M	
Construction		Construction	Construction	Project complete	

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board and State of Minnesota FDR Program.

# Malung Impoundment

**Project Proposer:** Roseau River Watershed District

**Description/Location:** The project area includes the 15 square mile Cow Creek watershed located southeast of the City of Roseau. Cow Creek drains into the Roseau River immediately upstream from the City of Roseau. The project will be comprised of a 900+ acre impoundment site. This site will provide a total of at least 4,000 acre-feet of gated and un-gated runoff storage.

**Need Statement:** The Malung Impoundment and Stafford area, City of Roseau, Hay Creek Norland area, Roseau Lakebed area, Big Swamp area, the Roseau River and the Red River of the North suffer from repetitive flood damages. Approximately 61,381 acres of agricultural land are contained within the 100-year floodplain in these areas. There are 85 miles of township, county, and State roads potentially affected, 423 miles of legal ditches, and 123 township, county and state bridges and culverts potentially affected by the proposed Project.



**Primary Purpose and Benefits:** The primary purpose of the Project is to provide a 50% reduction in the 10-year *and* a 30% reduction in the 100-year discharges from the Cow Creek drainage area, contributing to the Roseau River just upstream from the City of Roseau. The corresponding reduction in flows from the Cow Creek / Malung Impoundment area will reduce peak flows on the Roseau River by up to 4% for the 100-year event, thereby reducing corresponding flows and affected river stages in the City of Roseau by 2-3 inches at its peak. It will also reduce flooding durations in the City of Roseau as well as reduce flood damages in flood-prone areas downstream. It is hoped that the Project could reduce 10% of future potential flood damages in the Stafford basin, 5% in the Hay Creek Norland area, 2% in Roseau Lake Bed, and 1% or less in the Big Swamp and the Red River of the North. In the Stafford area alone (not including the City of Roseau), the flood damage reduction would include increased protection, less flood depth, and reduced flooding duration, directly improving 4,283 acres of ag land, 35 miles of roads, 28 miles of ditches, and 26 culverts and bridges previously prone to flood damages.

**Secondary Purpose and Benefits:** Secondary goals of the Project include reducing peak discharges, flood stages, and flood duration on the Red River of the North and providing a reduction in riverbank erosion and bank sloughing along the Roseau River (State Ditch 51).

**Project Cost: \$4,000,000**

**State 50% (\$2.0M) / Non-state 50% (\$2.0M)**

**Status:** Final project design is underway.

	Prior Years	FY 2009 (7/1/08-6/30/09)	FY 2010 (7/1/09-6/30/10)	FY 2011 (7/1/010-6/30/11)	FY2012 (7/1/11-6/30/12)
Approvals	PT/WG/WD	RB	DNR/COE/WCA		
Funding	\$60,000	RB/WD \$0.75M	State \$0.75M	State \$1.25M RB/WD \$1.25M	
Construction	Planning	Acquisition	Construction	Construction	Completed

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

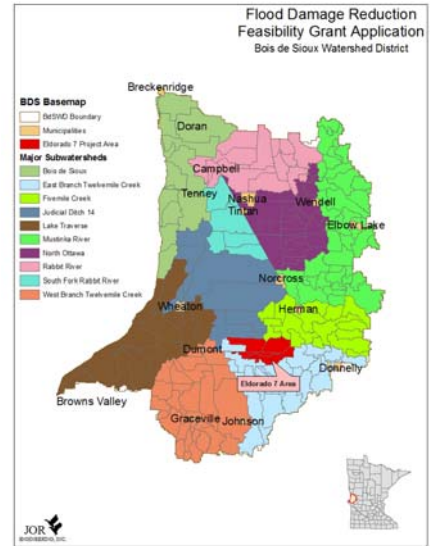
**Partners:** Red River Watershed Management Board and State of Minnesota Flood Damage Reduction Program.

# Eldorado 7 Project

**Project Proposer:** Bois de Sioux Watershed District

**Description/Location:**

This impoundment has the potential to control 7.87 square miles of the East Branch 12 Mile Creek sub watershed. The project is in the development/land acquisition stage. The project envisions a 640-acre impoundment that would include approximately 4 miles of dike along with an inlet channel. A diversion channel could be constructed to bring water into the project from southeast and storing it in the impoundment, providing flood relief to agricultural lands, roads and culverts along Traverse County Ditches #37, and #8. The project will be designed to store up to 2,400 acre-feet of floodwaters.



**Project Benefits:**

- **Flood Damage Reduction (Primary Objective):** Provide up to 2,400 acre-feet of flood storage. This is expected to reduce damages to lands downstream along the Twelve Mile Creek and numerous legal ditch systems. This project will also provide benefits to Lake Traverse, the Bois de Sioux River and Red River of the North.
- **Downstream Flow Augmentation:** Storage and gradual release of floodwaters will extend the duration of the runoff hydrograph benefiting in-stream habitat.
- **Water Quality:** This project is located in the East Branch Twelve Mile Creek Subwatershed. Twelve Mile Creek is listed as impaired waters for aquatic life. The entire Twelve Mile Creek and tributaries have not been fully assessed at this time but it is expected that turbidity will also be found to be a problem. Detention of floodwaters will allow suspended solids to settle out and reduce turbidity downstream.
- **Habitat Enhancement:** Established of a wet meadow and/or haying & grazing land will improving the wildlife habitat in the area.

**Problem Description:**

- **Flooding:** Local – farmland and structures (houses, grain storage, machinery storage) flooded almost annually in spring, road washouts and other infrastructure damages; Regional – Lake Traverse, Bois de Sioux River, Red River of the North.
- **Erosion/sedimentation:** Stream bank and sheet erosion, streambed sedimentation.
- **Other:** Lack of wildlife habitat due to intense agricultural activities.

**Estimated Cost: \$2,500,000 State: 50% (\$1.25M) Non-State: 50% (\$1.25M)**

**Status:** Preliminary Development

	Prior Years	FY2009 (7/1/08-6/30/09)	FY2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)
Approvals	None			
Funding			State \$1.0M WD \$650K	State \$250K RB \$600K
Construction			Acquisition/Engineering	Construction

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board, State of Minnesota, Bois de Sioux WD.

# Redpath Project

**Project Proposer:** Bois de Sioux Watershed District

**Description/Location:**

This impoundment site is located alongside a reach of the channelized Mustinka River (JD14). It will be an off-channel storage site designed to take high water off JD14. It also has the potential to control runoff from about 15 square miles of local drainage area that would flow directly into the storage area. The project is in the land acquisition stage. The site would include 1,120 acres; require approximately 7 miles of dike; an overflow connection from JD14; and an outlet control structure back to JD14. A diversion channel could be constructed to bring water in to the project from the southeast to maximize the local drainage area into the impoundment providing flood relief to agricultural lands, roads and bridges along Traverse County Ditches #35, #23, #4, and #42.

**Project Benefits:**

- **Flood Damage Reduction (Primary Objective):** Provide about 7,000 acre feet of flood control storage. This is expected to reduce damages to lands downstream along the Mustinka River and 12 Mile Creek as well as numerous legal ditch systems. This project will also help to minimize cross-over flows from the Mustinka Watershed to the Rabbit River Watershed and provide benefits on the Bois de Sioux River and Red River of the North.
- **Downstream Flow Augmentation:** Release of 2 cfs flow during ice free season in most years is being evaluated.
- **Water Quality:** This project is located along a reach of the Mustinka River that is listed as impaired waters for turbidity. The project design to allow suspended solids to settle out and reduce turbidity in this reach is being evaluated.
- **Habitat Enhancement:** Establishment of the area as a wet meadow for improving the wildlife habitat is being evaluated along with haying and grazing.

**Problem Description:**

- **Flooding:** Local – farmland and structures (houses, grain storage, machinery storage) flooded almost annually in spring, road washouts and other infrastructure damages; Regional – Lake Traverse, Bois de Sioux River and Red River of the North.
- **Erosion/sedimentation:** Streambank, gully, and sheet erosion, streambed sedimentation.
- **Other:** Lack of wildlife habitat due to intense agricultural activities.

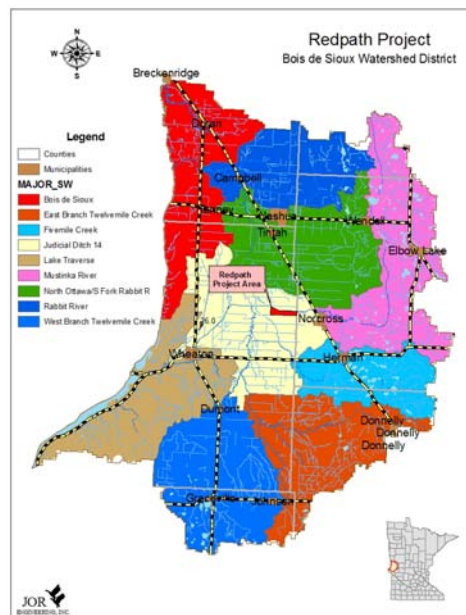
**Estimated Cost: \$8,500,000 State: 50% (\$4.25M)/Non-State: 50% (\$4.25M)**

**Status:** Preliminary Development

	Prior Years	FY2009 (7/1/08-6/30/09)	FY2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)
Approvals				
Funding		State \$1.0M RB \$1.0M	State \$0.5M WD \$0.5M	State \$2.75M RB \$1.175M O \$1.325M WD \$0.25M
Construction	Acquisition	Acquisition	Acquisition/Engineering	Construction

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board, State of Minnesota, Bois de Sioux WD, Judicial Ditch #14, Minnesota Pollution Control Agency, and Minnesota Department of Natural Resources.



# Upper Becker Dam Enhancement Project

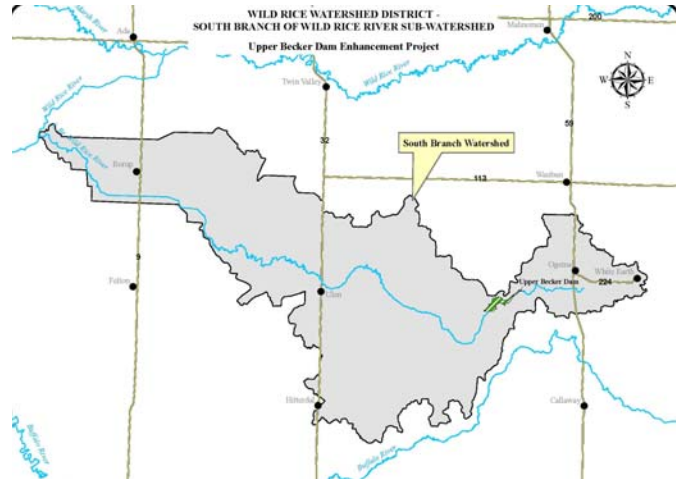
**Project Proposer:** Wild Rice Watershed District

**Description/Location:**

The South Branch of the Wild Rice River Sub-watershed covers parts of Becker, Clay, and Norman Counties, including the cities of Borup, Ulen, and Ogema.

The Upper Becker Dam is located in the easterly half of the South Branch of the Wild Rice River Sub-watershed. The Upper Becker Dam was originally constructed by the Wild Rice Watershed District in 1980. At that time, the dam was built to store approximately 2,060 ac-ft of temporary (non-gated) flood storage. The WRWD is now proposed to improve the structure to add approximately 8,600 ac-ft of additional flood storage capacity. With the enhancements, the site will provide 8,200 ac-ft of gated storage and approximately 2,300 ac-ft of temporary (non-gated) flood storage.

It will have the potential to control runoff from about 38 square miles of the total 250 square miles within the South Branch Sub-watershed.



**Project Benefits:**

- **Flood Damage Reduction:** The Upper Becker Dam Enhancement Project would control floodwaters from an approximately 37 square mile drainage area. As proposed, the planned site enhancements would provide reduction in flow and resultant flood damages along the South Branch of the Wild Rice River, Wild Rice River, and Red River of the North
- **Erosion / Sedimentation:** The project will result in a significant bank erosion reduction through the beach-ridge area of the South Branch of the Wild Rice River and resultant sedimentation that has been occurring in the downstream lake plain areas.
- **Water Quality:** This project is located in the contributing watershed of the Wild Rice River that is currently listed as impaired water for turbidity. In addition, to reducing bank erosion, the retention site will improve downstream water quality by allowing suspended sediment to settle out and reduce turbidity in the river.
- **Habitat Enhancement:** The establishment of the permanent vegetation within a portion of the retention site to improve wildlife habitat is being evaluated along with opportunities for haying and grazing other portions.

**Problem Description:**

- **Flooding:** Local - farmland and structures flooded almost annually in spring, road washouts and other infrastructure damages; Regional – Wild Rice River and Red River of the North.
- **Erosion/sedimentation:** Streambank erosion and resultant sedimentation. Gully and sheet erosion. Impaired streams (turbidity)
- **Other:** Lack of wildlife habitat due to intense agricultural activities.

**Estimated Cost: \$8-10,000,000 State: 50% (\$4-5M)/Non-State: 50% (\$4-5M)**

**Status:** Pre-Design/Land Acquisition

	Prior Years	FY2009 (7/1/08-6/30/09)	FY2010 (7/1/09-6/30/10)	FY 2011 (7/1/10-6/30/11)
Approvals		PT, WG, RB, WD, DNR, O		
Funding		State \$1.0 M RB \$0.5 M WD/O \$0.5 M	State \$1.0 M RB \$0.5 M WD/O \$0.5 M	State \$3.0 M RB \$1.5 M WD/O \$1.5 M
Construction		Acquisition/Engineering	Engineering /Construction	Construction

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Red River Watershed Management Board, State of Minnesota, Wild Rice WD

## Swede Grove Lake Outlet Project

**Project Proposer:**

Buffalo-Red River Watershed District

**Location/Description:** The project is located 6 miles northeast of Hawley, east of Minnesota Highway No. 32. Swede Grove Lake is a largely landlocked basin. In the last 10 years, the lake has risen above its natural outlet at various times. Natural channels carry the overflow water a few miles to the Buffalo River. The BRRWD was petitioned by Clay County to develop the Swede Grove Lake Outlet Project in 2004. County Roads Nos. 37 and 24 have required raising and improvements to keep them out of the rising waters of the lake. Currently, the road ditches sit full of water soaking up the roadway.



Swede Grove Lake was previously used by the DNR as a walleye rearing pond. With the higher water levels, rough fish have overwintered in the lake and the lake is no longer productive as a walleye rearing pond. The lake currently has a maximum depth of about 16 feet.

The project was discussed with the BRRWD Project Team and a more comprehensive project is currently being considered.

**Project Benefits:**

**Flood Damage Reduction:** All of 100-year flood runoff could be retained within the managed lake.

**Water Quality:** Control erosion on downstream agricultural lands.

**Habitat Enhancement:** Ability to provide for management of lake levels for wildlife benefits. Permanent upland buffers and wetland restorations proposed around lake.

**Problem Description:**

**Flooding:** Lake level is approximately 8' above historic level. Farm fields and road ditches have flooded due to expanding lake. Outlet overflow aggravates downstream flooding.

**Erosion and Sedimentation:** Water escaping from project area causes erosion on downstream agricultural lands.

**Estimated Cost: \$350,000                      State 50% (\$175,000) / Non-state 50 % (\$175,000)**

**Status:** Proposed/Construction 2008/2009

	Prior Years	FY2008 7/1/07-6/30/08	FY2009 (7/1/08-6/30/09)	FY2010 (7/1/09-6/30/10)
Approvals		PT, DNR		
Funding			State \$175,000 Local \$175,000	
Construction			Construction	Completed

**Key:** PT=Project Team; WG=Flood Damage Reduction Work Group; RB=Red River Watershed Management Board; WD=Watershed District; DNR=Minnesota DNR; O=Other

**Partners:** Clay Soil and Water Conservation District; Natural Resource Conservation Service; MN DNR; USFWS

# **GENERAL FUND REQUESTS**

## Red River Basin Mapping Initiative “Redefining the Landscape”

**Project Sponsor:** International Water Institute

**Project Description:** The Red River Basin Mapping Initiative includes four objectives: 1) collect and publicly disseminate high resolution digital elevation data (15 cm vertical and 15cm horizontal root-mean-square-error) for the entire US portion of the Red River Basin (39,400 square-miles), 2) collect high resolution digital imagery over selected areas, 3) develop a public data archival and dissemination system, and 4) public outreach and education to ensure/promote use and application of data across the Red River Basin.

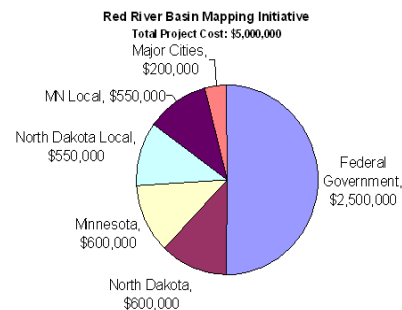
**Project Benefits:** The Red River Basin Mapping Initiative has a documented need and benefit to basin residents and decision-makers. The benefits will be extensive and profound; enhancing resiliency, capacity, performance, and economic efficiency at every level of decision-making in North Dakota, Minnesota, and Manitoba. Known uses and benefits of high-resolution elevation data include:

- Increased agricultural productivity
- Enhanced flood and drought damage mitigation
- Enhanced public works planning and project development
- Detailed surface hydrologic and hydraulic modeling (flood and drought forecasting)
- Ecological monitoring
- Conflict resolution

**Project Justification:** Updated seamless elevation mapping identified as a priority need following the 1997 flood (International Joint Commission & International Flood Mitigation Initiative)

**Estimated Cost:** Total Project = \$5,000,000; MN share = \$600,000

Funding Partners	Amount	Committed
Federal Government	\$2,500,000	X
State of ND	\$600,000	X
State of MN	\$600,000	
Red River Watershed Management Board	\$500,000	X
Buffalo Red Watershed District	\$50,000	X
Red River Joint Water Resources District	\$473,000	X
Cass County Joint Water Resources District	\$91,531	X
Cities	\$185,469	X
Total	\$5,000,000	



**Status:** Anticipated project start April, 2008

**Key:** RRBMI = Red River Basin Mapping Initiative; RRB = Red River of the North; DEM = Digital Elevation Model; IWI = International Water Institute

**Partners:** North Dakota State Water Commission, MN Department of Transportation, US Geological Survey, Natural Resources Conservation Service, Red River Watershed Management Board, Buffalo Red Watershed District; City of Breckenridge, City of Wahpeton, City of Moorhead, City of Fargo, City of East Grand Forks, City of Grand Forks, Red River Joint Water Resources District, Cass County Joint Water Resources District



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## Red River Watershed Management Board

### *Farmstead Ring Dike Program HF2927 Rep. Kent Eken – SF2788 Sen. Rod Skoe*

The Flood Damage Reduction Grant Assistance Program (FDR) was created by the Minnesota Legislature in 1987 to provide technical and financial assistance to local government units for reducing the damaging effects of floods. It is administered by the Waters Division of the Minnesota Department of Natural Resources (DNR). Under this program the state can make cost-share grants to local units of government for up to 50 percent of the total cost of a project.

Farmstead ring dikes are located in nearly all of the major tributary watersheds to the Red River of the North and also in several tributary watersheds to the Mississippi River. The recommended plan consists of a ring dike constructed around a farmstead to an elevation one foot higher than the base flood elevation (100-year event) if in a mapped floodplain, or to an elevation two feet higher than the flood of 1997 if the area is not mapped.

The typical funding for the ring dike program has been 50% state, 25% Red River Watershed Management Board (RRWMB), and 25% split between the local watershed district and the landowner. The appropriation for this program has been as follows:

<b>Funding</b>	<b>1997-2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
State (50%)	\$3,095,430	\$250,000	\$250,000	\$122,730	\$125,000	\$125,000	\$125,000	\$400,000
RRWMB (25%)	\$1,547,715	\$125,000	\$125,000	\$61,365	\$62,500	\$62,500	\$62,500	\$200,000
Local Landowner (12.5%)	\$773,857	\$62,500	\$62,500	\$30,682	\$31,250	\$31,250	\$31,250	\$100,000
Watershed Districts (12.5%)								
Wild Rice WD	\$142,500	\$15,625	\$10,417	\$12,500	\$13,125	\$37,500	\$15,000	\$187,500
Middle-Snake-Tamarac WD	\$176,812	\$15,625	\$15,625	\$14,433	\$13,125	\$37,500	\$20,000	\$100,000
Red Lake	\$129,750	\$15,625	\$13,889	\$3,750	\$1,250	\$5,000	\$37,500	\$20,000
Sand Hill River	\$11,795	\$15,625	\$3,472	0	0	0	0	0
Buffalo-Red River	\$71,250	\$15,625	\$3,472	0	0	\$30,000	\$15,000	\$20,000
Bois de Sioux WD	\$33,000	\$15,625	\$10,417	0	0	0	0	0
Two Rivers WD	\$93,750	\$15,625	0	0	0	0	\$17,500	0
Roseau River WD	\$62,500	0	0	0	\$3,750	\$15,000	\$20,000	\$50,000
Joe River	\$52,500	\$22,500	\$17,500	0	0	0	0	0

The total number of ring dikes constructed to date is approximately 242.

## Local Landowners

Critical players in small projects, like ring dikes, see the project's immediate value. The average cost of a farmstead ring dike is \$35,000 - \$40,000 depending on the local topography and size of the farmstead. Each ring dike is designed to protect a farmstead residence and its related structures for storing crops, cattle, and production equipment. It has been estimated that the value of a single grain storage structure, when full from a season's harvest, or the value of a single cattle-related facility, will often exceed the cost of the ring dike construction.



Farmstead ring dike located on the Tim Anvinson farm of Section 16, Higdem Township, Polk County, Minnesota.  
(Middle-Snake-Tamarac Rivers WD)

## Purpose

The goal of existing regulations and programs for flood damage reduction is to minimize the threat to life and property from flooding. The efforts of local governments to enforce their zoning ordinances and to sponsor projects and acquire or relocate flooded buildings have helped to reduce risk to lives and flood damages. The Farmstead Ring Dike Program reduces flood damages and flood fight risks, and protects the life-long investments of farm homes, equipment, facilities and animals.

## Needs Assessment

In fiscal years 2008-2009, the legislature appropriated \$200,000 each year for ring dikes with the authorization to use the second year's funding in year one, if the demand warranted. The entire \$400,000 has been committed to projects. In December 2007, RRWMB member watershed districts were requested to compile a list of ring dikes that remain to be constructed within their respective district. The list was to include cost estimates and numbers of *both* applications on hand **and** identified landowner interest. The member districts received 14 applications or landowner interest.

Therefore, the Red River Watershed Management Board requests a general fund appropriation of \$245,000 in FY 2009 for the Farmstead Ring Dike Program. These landowners have struggled with flooding long enough and it's time to complete the job started in 1997.