

## **Information for File #2012-05593-BGO**

**Applicant:** Redwood County Highway Department – Mr. William Rabenberg

**Corps Contact:** Benjamin Orne

**Address:** 180 Fifth Street East, Suite 700, St. Paul, Minnesota 55101-1678

**E-Mail:** [benjamin.g.orne@usace.army.mil](mailto:benjamin.g.orne@usace.army.mil)

**Phone:** (651) 290-5280

**Primary County:** Redwood County

**Section:** 21 and 22

**Township:** 109N.

**Range:** 39W.

**Information Complete On:** October 17, 2014

**Posting Expires On:** October 27, 2014

**Authorization Type:** LOP-05-MN

This application is being reviewed in accordance with the practices for documenting Corps jurisdiction under Sections 9 & 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act identified in Regulatory Guidance Letter 07-01. We have made a preliminary determination that the aquatic resources that would be impacted by the proposed project are regulated by the Corps of Engineers under Section 404 of the Clean Water Act. Our jurisdictional review and final jurisdictional determination could result in modifications to the scope of the project's regulated waterbody/wetland impacts and compensatory mitigation requirements identified below.

### **Project Description**

The Redwood County Highway Department proposes to discharge dredged or fill material into approximately 0.19 acre of fresh (wet) meadow (Type 2) wetlands directly abutting an unnamed tributary to Plum Creek (Judicial Ditch 20A) and below the plane of the ordinary high water mark into approximately 0.22 acre of Plum Creek. The work will be conducted in association with the in-place replacement of an existing single span timber bridge (Bridge L6901) with a road retention structure at the Bunker Avenue crossing. The existing bridge is hydraulically insufficient and the road grade currently "sags" at this crossing location which has caused overtopping and flood damages to the steep inslopes on at least two occasions. The road retention structure will consist of a

single 8-foot by 8-foot reinforced concrete box culvert with a 10-foot by 8-foot reinforced concrete box riser (standpipe weir) for larger flows and a 30-inch reinforced concrete pipe for maintaining low flows. In addition, approximately 1,600 linear feet of Bunker Avenue will be regarded to raise the vertical profile of the roadway approximately 10 feet. The retention structure and higher roadway will create a temporary upstream impoundment which will have the ability to store up to approximately 187 acre-feet of water. The project is being proposed to improve the safety of the roadway and create temporary water storage as a means of decreasing downstream flows and flood damages.

This project is an initiative of Area II Minnesota River Basin Projects, Inc. Area II was formed in 1978 as a non-profit organization with a goal of working to alleviate flooding problems in southwestern Minnesota by assisting in the engineering design, hydrologic and hydraulic modeling, construction, and finance of flood control projects. Area II receives a cost-share rate of 75% state funding and 25% local funding for office administration and project implementation. Oversight of this grant-in-aid program is provided by the Minnesota Board of Water and Soil Resources. More information on Area II can be found on their webpage at: [www.area2.org](http://www.area2.org).

### **Alternatives**

The applicant has considered the following alternatives:

1. Do Nothing – This alternative would not address the hydraulic deficiency of the existing bridge which hampers farm and local traffic. Under this alternative, the bridge would eventually need to be closed as further deterioration occurs. This lack of access for traffic and emergency vehicles is not acceptable to the local residents.
2. Replace the bridge with an equivalent sized structure – The replacement of the bridge has been considered without raising the road grade. This replacement would require a larger box culvert or bridge structure. This alternative could be lower in cost than the selected alternative. However, this option would still leave a substantial sag in the road grade and thus would be less safe than the selected alternative. Also, the project would not store water upstream of the crossing, and not reduce downstream flows.

### **Federally-listed Threatened and Endangered Species**

According to the USFWS Midwest Region website, which was checked on October 15, 2014, the Northern long-eared bat (proposed as endangered) and Prairie bush clover (threatened) are found in Redwood County, Minnesota.

### **Historic Properties**

Bridge L6901 is not eligible for listing in the National Register of Historic Places.

## **State Listed Impaired (Section 303(d)) Waters**

According to the Minnesota Pollution Control Agency's Impaired Waters Viewer, which was checked on October 15, 2014, Plum Creek is listed as an Impaired River/Stream for aquatic life due to excess turbidity and aquatic recreation due to fecal coliform. The overall condition is described as "Not always suitable for swimming and wading due to high bacteria levels caused by the presence of human or animal waste in the water. May not support a thriving community of fish and other aquatic organisms, as indicated by excessive turbidity (suspended solids)."

The project site is located approximately 5.25 miles upstream from Plum Creek.

## **Compensatory Mitigation**

The applicant proposes to satisfy compensatory wetland mitigation requirements by debiting wetland credits from a Corps-approved, Board of Water and Soil Resources Local Government Roads Wetland Replacement Program mitigation bank.

## **Drawings**

Page 1 of 10 through Page 3 of 10 provides an overview of the proposed construction activities.

Page 4 of 10 shows the wetland and stream areas that would be impacted by discharges of dredged or fill material.

Page 5 of 10 is a flow reduction data sheet documenting as is and proposed conditions.

Page 6 of 10 through Page 10 of 10 are as is and proposed conditions maps showing the total amount of wetland temporarily inundated by the 1-year, 2-year, 5-year, 10-year, and 100-year flood events.

**PLAN SYMBOLS**

STATE LINE	-----
COUNTY LINE	-----
TOWNSHIP OR RANGE LINE	-----
SECTION LINE	-----
QUARTER LINE	-----
SIXTEENTH LINE	-----
THIRTY-SECOND LINE	-----
RIGHT-OF-WAY LINE	-----
SLOPE (EASEMENT)	-----
PRESENT RIGHT-OF-WAY LINE	-----
CONTROL OF ACCESS LINE	-----
PROPERTY LINES	-----
VACATED PLATTED PROPERTY	-----
CORPORATE HIGHWAY CENTER LINE	-----
TRUNK HIGHWAY CENTER LINE	-----
RETAINING WALL	-----
RAILROAD	-----
RAILROAD RIGHT-OF-WAY LINE	-----
RIVER OR CREEK	-----
DRY RUN	-----
GRASSY DITCH	-----
SHAW TILE	-----
CLAY TILE	-----
GRASS	-----
BARBED WIRE FENCE	-----
CHAIN LINK FENCE	-----
RAILROAD SNOW FENCE	-----
STONE WALL OR FENCE	-----
RAILROAD CROSSING SIGN	-----
RAILROAD CROSSING BELL	-----
ELECTRIC WARNING SIGN	-----
CROSSING GATE	-----
WEAVER CORNER	-----
SPRINGS	-----
MARSH	-----
TIMBER	-----
ORCHARD	-----
BRUSH	-----
NURSERY	-----
CATCH BASIN	-----
FIRE HYDRANT	-----
CATTLE GUARD	-----
OVERPASS (HIGHWAY OVER)	-----
UNDERPASS (HIGHWAY UNDER)	-----
BRIDGE	-----
BUILDING (ONE STORY FRAME)	-----
F - FRAME	-----
C - CONCRETE	-----
S - STONE	-----
B - BRICK	-----
SI - STUCCO	-----
IRON PIPE OR ROD	-----
WOODEN POST (STONE, CONCRETE, OR METAL)	-----
WOODEN HUB	-----
GRAVEL PIT	-----
SAND PIT	-----
BORROW PIT	-----
ROCK QUARRY	-----

**UTILITIES SYMBOLS**

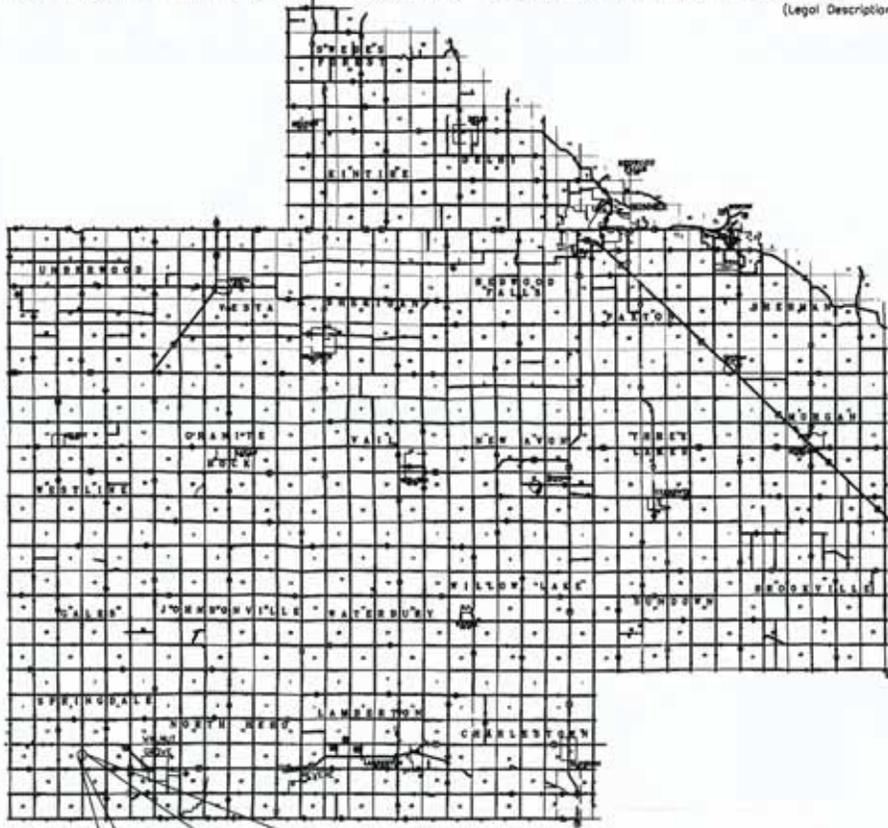
POWER POLE LINE	-----
TELEPHONE POLE LINE	-----
JOINT TELEPHONE AND POWER ON POWER POLES	-----
ON TELEPHONE POLES	-----
ANCHOR	-----
STEEL TOWER	-----
STREET LIGHT	-----
POSTBOX	-----
GAS MAIN	-----
WATER MAIN	-----
CONDUIT	-----
TELEPHONE CABLE IN CONDUIT	-----
ELECTRIC CABLE IN CONDUIT	-----
TELEPHONE MANHOLE	-----
ELECTRIC MANHOLE	-----
BURIED TELEPHONE CABLE	-----
BURIED ELECTRIC CABLE	-----
AERIAL TELEPHONE CABLE	-----
SEWER (SANITARY OR STORM)	-----
SEWER MANHOLE	-----

**AREA II MINNESOTA RIVER BASIN PROJECTS INC.  
COUNTY OF REDWOOD**

**SPRINGDALE TOWNSHIP, SECTION 21 WATER RETENTION PROJECT**

CONSTRUCTION PLANS FOR GRADING, BOX CULVERT, AND AGGREGATE SURFACING IMPROVMENTS

BUNKER AVENUE IN SPRINGDALE TOWNSHIP 4.0 MILES EAST OF TRACY, MN IN REDWOOD COUNTY  
(Geographical Description)  
FROM A POINT 1927 FT. NORTH OF THE SE CORNER OF SECTION 21, T109N R38W TO A POINT 1700 FT. NORTH  
(Legal Description)



WRP 08-05  
SPRINGDALE 21 WATER RETENTION PROJECT  
BEGIN PROJECT STA. 0+00  
END PROJECT STA. 17+00

MINN. PROJ. NO. ....  
GOVERNING SPECIFICATIONS  
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION  
"STANDARD SPECIFICATION FOR CONSTRUCTION" SHALL APPLY.

**INDEX**

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	QUANTITIES SHEET
SHEET NO. 3	DETAIL SHEET
SHEET NO. 4	EROSION CONTROL PLAN
SHEET NO. 5	PREFORMED SCOUR HOLE SHEET
SHEET NO. 6	DRAINAGE DIAPHRAGM SHEET
SHEET NO. 7-8	BOX CULVERT DETAILS
SHEET NO. 9-10	PLAN & PROFILE SHEETS
SHEET NO. 11-15	CROSS SECTION SHEETS

THIS PLAN CONTAINS 15 SHEETS

**DESIGN DESIGNATION**

ADT (CURRENT YEAR) 2013 = Less than 50 assumed  
ADT (FUTURE YEAR) 2033 = Less than 50 assumed  
DESIGN SPEED 40 mph  
BASED ON STOPPING SIGHT DISTANCE:  
HEIGHT OF EYE: 3.5' HEIGHT OF OBJECT: 2.5'

NOTE:  
EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW, NOTIFY GOPHER STATE ONE CALL 1-800-252-1166 OR 612-454-0002

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

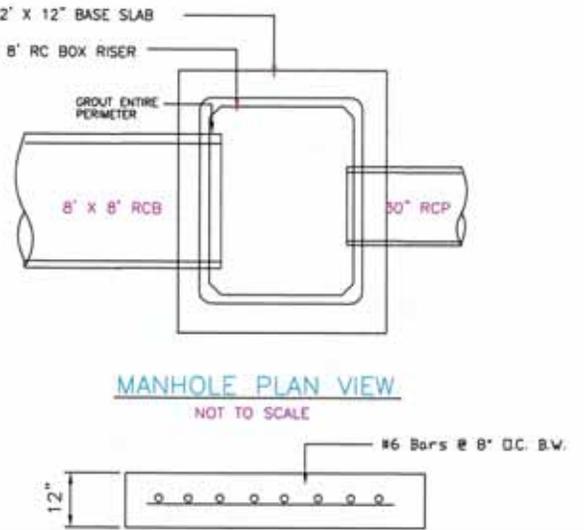
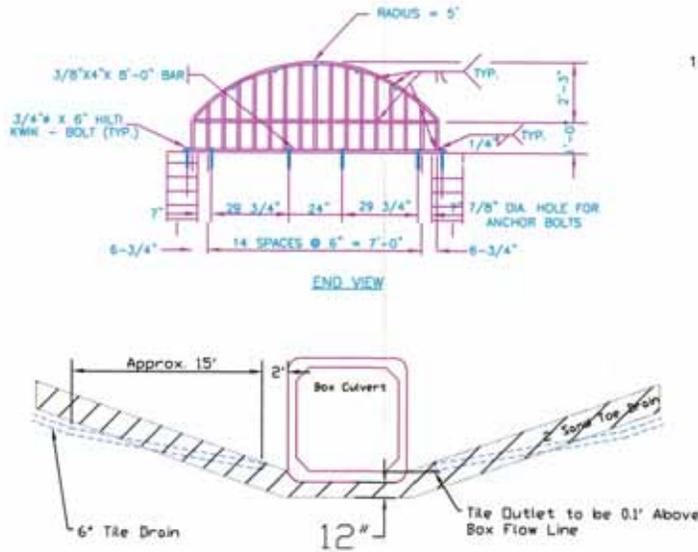
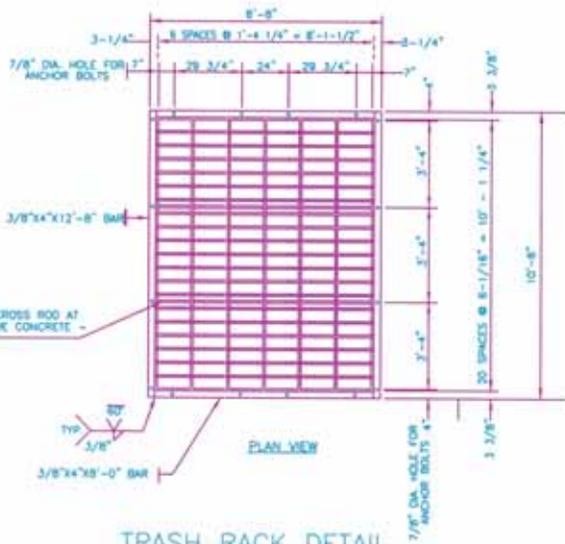
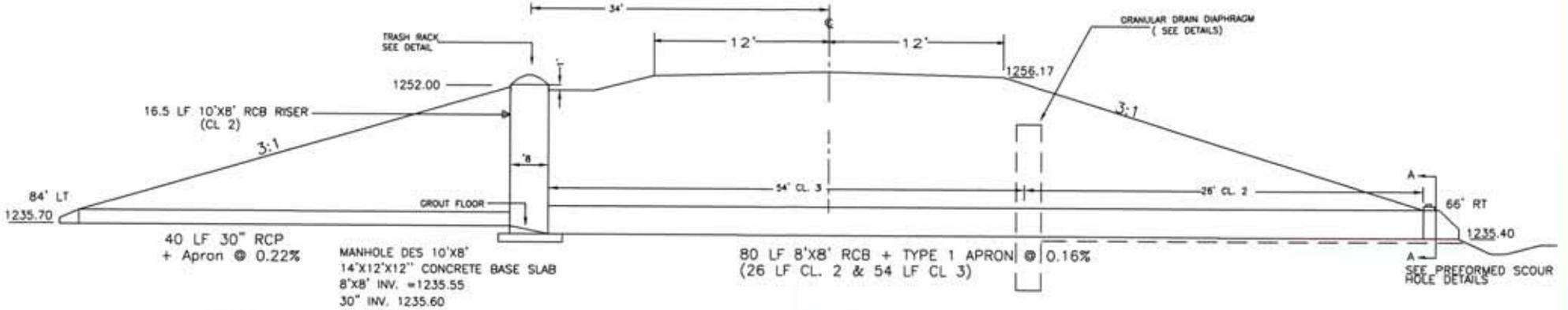
Signature: *Duane W. Hansel* Typed Name: Duane W. Hansel  
Date: 10/15/12 License No. 14972

AREA II MINNESOTA RIVER BASIN PROJECTS, INC.  
1400 East Lyon Street  
Marshall, MN 56258  
(507)537-6369

WRP 13-01

SHEET 1 OF 15 SHEETS

STATION 9+70  
 8'X8' RCB CULVERT  
 TYPICAL PIPE SECTION  
 NOT TO SCALE  
 NO SKEW



**NOTES:**

1. ALL BARS ARE 1" COLD ROLLED

NOTE: DETAILS ARE NOT TO SCALE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signed: Duane Hummel Date: 8/20/12 Reg. No. 14972

DESIGNED: Duane Hummel  
 DRAWN: JAS  
 CHECKED: Duane Hummel

AREA II MINNESOTA WATER BARRIERS PROJECTS AND  
 1400 East Lyon Street  
 Marshall, MN 56258  
 (507)537-6369

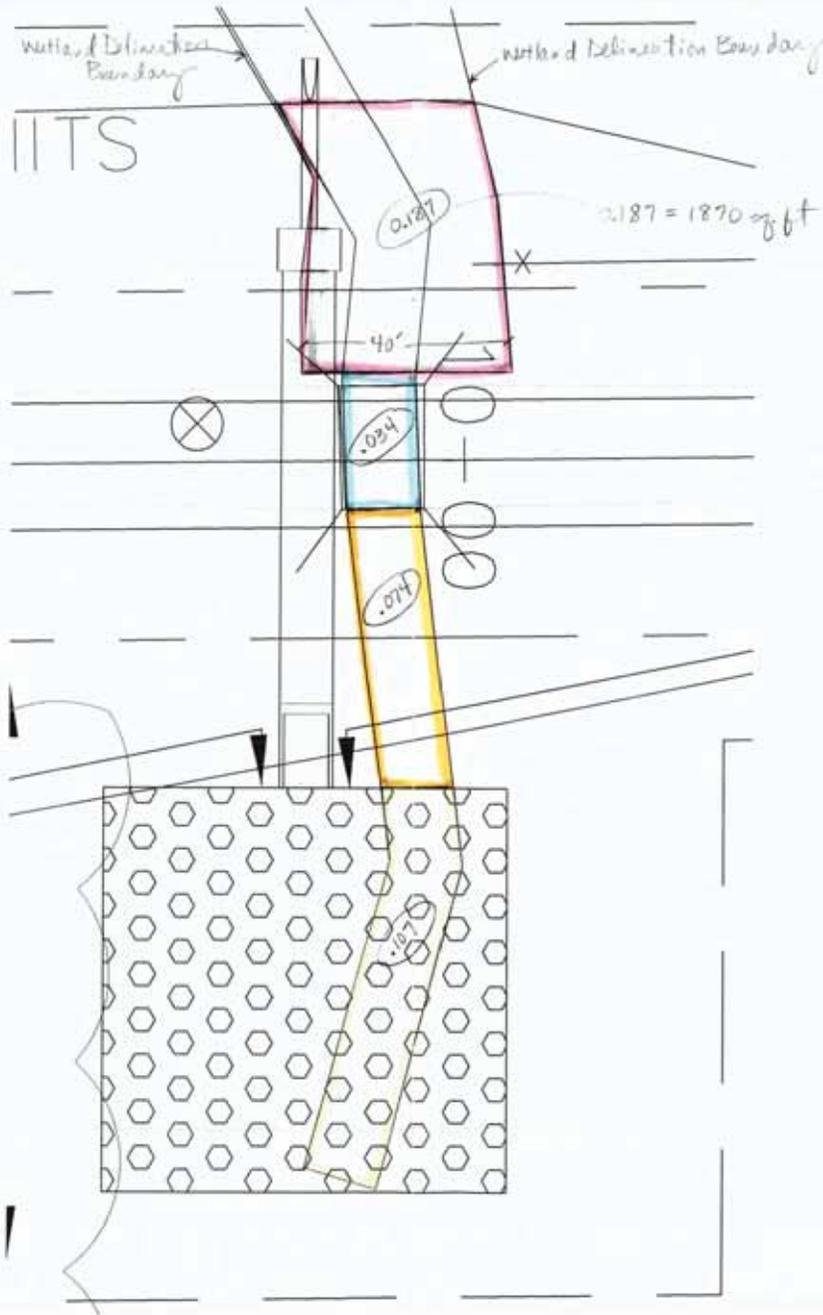
REDWOOD COUNTY, MINNESOTA  
 SPRINGDALE 21 WATER RETENTION PROJECT 15-01

SHEET #  
 3 OF 3



Spingdale 21

d: Plan Sheets - Spr. 21  
Sht 9



Scale = 1" = 100'  
 $\therefore A_{in^2} \times 100 \times 100 = SF$

- 0.187 = 1870 SF
- 0.034 = 340 SF
- 0.074 = 740 SF
- 0.107 = 1070 SF

# AREA II

## MINNESOTA RIVER BASIN PROJECTS, INC.

1400 East Lyon Street • P.O. Box 267 • Marshall, MN 56258 • 507-537-6369

### FLOW REDUCTION DATA SHEET

Project Name: Springdale 21 Road Retention  
 County: Redwood - 3 miles west of Walnut Grove  
 Location: Northeast 1/4, Section 21, Springdale Township  
 Drainage Area: 4.5 Square Miles

Date: 08/15/12  
 Notes: Existing Bridge on Township Road

Storm	Rain Amount (inches)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Peak Elevation		Peak Storage (acre-ft)		Peak Pool Area (acres)		Peak Outflow (cfs)		Reduction inflow-outflow (cfs)			Time (hours) Above Base Flow	
				As Is	Proposed	As Is	Proposed	As Is	Proposed	As Is	Proposed	As Is	Proposed	% Reduction	As Is	Proposed
1-Year	2.3	96	107	1238.2	1245.1	0.1	15	0.1	6	96	67	0	29	30.2%	38	40
2-Year ✓	2.7	154	159	1238.9	1248.5	0.3	43	0.2	10.6	154	80	0	74	48.1%	39	40
5-Year ✓	3.55	318	286	1240.5	1252.8	1	105	0.7	19.2	317	173	1	145	45.6%	39	40
10-Year ✓	4.2	480	396	1241.8	1253.5	2.2	120	1.3	21.4	478	316	2	164	34.2%	40	42
25-Year	4.8	632	504	1242.8	1254.2	5	134	2.8	23.4	625	470	7	162	25.6%	43	44
50-Year ✓	5.4	795	617	1243.9	1254.7	8.2	148	4.4	25.4	785	622	10	173	21.8%	43	45
100-Year ✓	5.95	968	724	1244.9	1255.2	13.9	162	5.8	27.4	942	775	26	193	19.9%	44	45

100-Year Peak Pool Elevation = 1255.2      Added Hours Above Base Flow (100-Yr) = 1      100-Year Storage/Runoff = 22.4%

**As Is Conditions:**

Existing wood bridge with 15' x 12' opening at elevation 1234.95.  
 Township road with overflow elevation 1249.5.

**Proposed Conditions:**

Main culvert to be a 8' x 8' box at elevation 1235.55  
 Inlet culvert to be a 30" RCP with inlet elevation 1235.7  
 10' x 8' box riser with open inlet at elevation 1252  
 Raise road to an elevation of 1256.1  
 Will require DNR permits for dam safety and work in public waters.

Average % Storm Reduction / Year = 40.1%  
 Average Storm Flow Reduction / Year = 89.0 cfs  
 Average Storm Storage/ Year = 59.9 acre-feet



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**Legend**

- 2 Year Flood Pool - 1248.5 ft Proposed Condition (Based on Lidar 1 Meter DEM)
- 2 Year Flood Pool - 1238.9 ft Existing Condition
- 2 Year Flood Pool Proposed Acres = 4.69
- 2 Year Flood Pool Existing Acres = 0.14
- Index Contour
- Intermediate Contour
- Delineated Wetlands

0 200 Feet

Source: NRCS, MnGeo, MnDOT, MnDNR

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**Legend**

- 5 Year Flood Pool - 1252.8 ft Proposed Conditions (Based on Lidar 1 Meter DEM)
- 5 Year Flood Pool - 1240.5 ft Existing Conditions
- 5 Year Flood Pool Proposed Acres = 7.32
- 5 Year Flood Pool Existing Acres = 0.36
- Index Contour
- Intermediate Contour
- Delineated Wetlands

0 200 Feet

Source: NRCS, MnGeo, MnDOT, MnDNR

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**Legend**

- 10 Year Flood Pool - 1253.5 ft Proposed Conditions (Based on Lidar 1 Meter DEM)
- 10 Year Flood Pool - 1241.8 ft Existing Conditions
- 10 Year Flood Pool Proposed Acres = 7.84
- 10 Year Flood Pool Existing Acres = 0.78
- Index Contour
- Intermediate Contour
- Delineated Wetlands

0 200 Feet

Source: NRCS, MnGeo, MnDOT, MnDNR

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**Legend**

- 100 Year Flood Pool - 1255.2 ft Proposed Conditions (Based on Lidar 1 Meter DEM)
- 100 Year Flood Pool - 1244.9 ft Existing Conditions
- 100 Year Flood Pool Proposed Acres = 9.06
- 100 Year Flood Pool Existing Acres = 2.43
- Index Contour
- Intermediate Contour
- Delineated Wetlands

0 200 Feet

Source: NRCS, MnGeo, MnDOT, MnDNR

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