Appendix A: References

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Appendix B: Water Quality Data

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
10/30/06			*25.8*		*20*	MPCA
09/27/06			*85.3*		*580*	MPCA
09/13/06	*> 60*	*12*	*27.7*		*200*	MPCA
08/28/06	*55*	*9.6*	*52*		*150*	MPCA
08/09/06			*43*		*1100*	MPCA
07/24/06	*60*	*14*	*19.5*		*78*	MPCA
07/18/06	*34*	*14*	*7.7*		*37*	MPCA
06/22/06			*128*		*1100*	MPCA
06/07/06	*37*	*33*	*21*		*140*	MPCA
05/23/06			*27.5*		*40*	MPCA
05/15/06	*80*	*19*	*19.5*		*22*	MPCA
04/27/06			*9.1*		*22*	MPCA
04/19/06	*24*	*48*	*52.8*		*44*	MPCA
03/07/06		*180*	*161*			MPCA
02/01/06		*160*	*107*			MPCA
11/02/05	*65*	*11*	*43.6*			MPCA
10/12/05	*19*	*54*	*61*			MPCA
09/08/04	*28*	*41*	*29.7*	*260*	*160*	MPCA
08/25/04	*20*	*32*	*20.6*	*140*	*64*	MPCA
07/21/04	*20*	*68*	*54.9*			MPCA
06/27/04	*17*	*78*	*60.9*			MPCA
06/27/04						MPCA
05/23/04	*23*	*68*	*53.7*			MPCA
04/26/04	*65*	*14*	*18.7*	*8*	*8*	MPCA
04/26/04				*< 4*	*< 4*	MPCA
03/28/04		*120*	*89.5*			MPCA
02/02/04		*9.6*	*8.2*			MPCA
02/02/04						MPCA
12/15/03		7		90	70	Iowa DNR
11/17/03		7		30	30	Iowa DNR
11/11/03		*4.8*	*8.4*			MPCA
10/21/03	*98*	*6*	*6*	*72*	*64*	MPCA
10/21/03				*< 4*	*< 4*	MPCA
10/20/03		10		50	50	Iowa DNR
09/15/03		110		5100	5000	Iowa DNR
08/27/03				440	400	Iowa DNR
08/18/03		42		660	240	Iowa DNR
07/14/03		44		110	110	Iowa DNR
06/16/03		66		120	110	Iowa DNR
05/19/03		41		90	90	Iowa DNR
04/14/03		21		10	10	Iowa DNR
03/17/03		430		120	81	Iowa DNR
11/18/02		12		*Non-detect	*Non-detect	Iowa DNR
10/14/02		25		60	60	Iowa DNR
09/16/02		32		200	170	Iowa DNR

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
08/22/02		210		22000	22000	Iowa DNR
08/19/02		110		230	170	Iowa DNR
07/15/02		25		110	110	Iowa DNR
06/17/02		38		*Non-detect	*Non-detect	Iowa DNR
05/20/02		15		*Non-detect	*Non-detect	Iowa DNR
04/15/02		93		30	20	Iowa DNR
03/18/02		13		*Non-detect	*Non-detect	Iowa DNR
09/18/01	*22*	*33*	*19*	*420*	*300*	MPCA
08/27/01	*27*	*28*	*12.1*	*100*	*75*	MPCA
07/10/01	*20*	*61*	*29*	*280*	*250*	MPCA
06/06/01			*6.5*	*2000*	*1800*	MPCA
06/05/01						MPCA
06/05/01	*52*	*18*				MPCA
06/05/01						MPCA
05/14/01	*29*	*43*	*11.72*	*130*	*33*	MPCA
04/24/01						MPCA
04/24/01	*7*	*490*	*124*	*7100*	*5500*	MPCA
04/24/01						MPCA
03/27/01		*56*	*23*			MPCA
01/24/01						MPCA
01/24/01		*15*	*6.8*			MPCA
01/24/01						MPCA
11/21/00		*16*	*9.8*			MPCA
10/25/00						MPCA
10/25/00	*30*	*160*	*50*	*300*	*600*	MPCA
10/25/00						MPCA
09/14/99	*22*		*24*			MPCA
08/11/99	*44*		*8*			MPCA
07/14/99	*24*		*25*			MPCA
06/09/99	*23*		*20*			MPCA
05/26/99	*26*		*31*			MPCA
04/29/99	*13*		*54*			MPCA
03/26/99	*18*		*34*			MPCA
02/03/99			*7.7*			MPCA
11/17/98	*7*		*21.8*			MPCA
10/22/98	*21*					MPCA
09/25/97	*21*		*26*			MPCA
08/05/97	*29*		*19*			MPCA
07/23/97	*12*		*77*			MPCA
06/18/97	*43*		*8.5*			MPCA
05/29/97	*50*		*10*			MPCA
04/15/97			*46*			MPCA

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
04/01/97			190			MPCA
11/07/96			22			MPCA
10/22/96			19			MPCA
09/20/94		29		250		MPCA
09/01/94		46		350		MPCA
07/12/94		60		830		MPCA
06/28/94		100		1500		MPCA
05/23/94		51		99		MPCA
05/02/94		300		4400		MPCA
03/08/94		100		340		MPCA
01/04/94		7.4		190		MPCA
10/27/93		12		36		MPCA
09/25/91		57		4800		MPCA
08/13/91		130		380		MPCA
07/02/91		160		220		MPCA
06/11/91		150		770		MPCA
05/22/91		87		660		MPCA
04/09/91		13		8		MPCA
03/26/91		27		32		MPCA
01/15/91		39		< 9		MPCA
10/23/90		12		350		MPCA
09/07/88		53		360		MPCA
08/10/88		30		230		MPCA
07/07/88		49		510		MPCA
06/08/88		68		270		MPCA
05/25/88		29		88		MPCA
04/06/88		130		24		MPCA
03/09/88		440		40		MPCA
01/06/88		4		4		MPCA
10/07/87		8		76		MPCA
09/09/85		210		2600	3400	MPCA
08/07/85		61		500	900	MPCA
07/10/85		77		720	880	MPCA
06/05/85		220		440	560	MPCA
05/08/85		120		100	140	MPCA
04/10/85		59		170	120	MPCA
03/11/85		800				MPCA
01/09/85		8.1				MPCA
09/21/82		60		1700		MPCA
08/24/82		68		490		MPCA
07/27/82		120		1300		MPCA
06/22/82		74		460		MPCA

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
05/25/82		19		490		MPCA
04/27/82		48		< 20		MPCA
03/10/82		22		50		MPCA
01/06/82		12		50		MPCA
10/06/81		22		490		MPCA
01/29/81		3.2	1.6	20		MPCA
02/12/80						MPCA
09/19/77		24	17	170		MPCA
08/16/77		185	94	240000		MPCA
07/18/77		110	29	700		MPCA
06/20/77		59	35	1700		MPCA
05/17/77		20	7	40		MPCA
04/19/77		27	9.7	170		MPCA
03/14/77		420	200	4600		MPCA
02/15/77		6.8	5.3	50		MPCA
12/20/76		3.6	9	20		MPCA
11/22/76		4.4	7.6	20		MPCA
10/25/76		34	15	80		MPCA
09/27/76		39	12	790		MPCA
08/17/76		66	22	490		MPCA
07/20/76		140	39	1300		MPCA
06/22/76		14	11	170		MPCA
05/24/76		22	8.5	50		MPCA
04/27/76		17	5.7	< 20		MPCA
03/18/76		170	88	490		MPCA
02/19/76		25	15	220		MPCA
01/21/76		4.4	3.4	< 20		MPCA
12/17/75		1.6	5	20		MPCA
11/19/75		19	7.6	50		MPCA
10/21/75		11	8.4	330		MPCA
09/22/75		17	8.8	1300		MPCA
08/25/75		43	18	35000		MPCA
07/14/75		34	12	< 20		MPCA
06/16/75		56	13	1300		MPCA
05/20/75		29	6.5	< 20		MPCA
04/15/75		220	63	330		MPCA
03/20/75		24	7	< 20		MPCA
02/19/75		18	7.9	< 20		MPCA
01/29/75		59	12	80		MPCA
12/17/74		6.4	8	170		MPCA
11/13/74		5.6	4.4	110		MPCA
10/02/74		20	6.7	490		MPCA

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
09/04/74		32	12	330		MPCA
08/06/74		41	13	110		MPCA
07/02/74		82	25	460		MPCA
06/04/74		95	11	170		MPCA
05/07/74		20	7	310		MPCA
04/10/74		37	12	20		MPCA
03/13/74		8	18	130		MPCA
02/13/74		10	3.6	20		MPCA
01/09/74		1.2	2.8	130		MPCA
12/28/73		10	3.4	80		MPCA
11/16/73		4	4.5	330		MPCA
10/24/73		39	14	490		MPCA
09/20/73			15	80		MPCA
08/30/73		70	23	490		MPCA
07/26/73		58	14	130		MPCA
06/28/73		97	26	130		MPCA
05/30/73		59	12	50		MPCA
04/19/73		81	22	70		MPCA
03/22/73		54	23	130		MPCA
02/21/73		3	2.8	5400		MPCA
01/10/73		5	3.3	< 20		MPCA
12/28/72		4	3.3	20		MPCA
11/21/72		13	5.7	330		MPCA
10/25/72		13	6.2	230		MPCA
09/27/72		100	28	490		MPCA
08/24/72		1200	35	140		MPCA
07/27/72		120	32	17000		MPCA
06/27/72		110	24	230		MPCA
05/31/72		270	55	4900		MPCA
04/13/72		28	10	80		MPCA
11/05/71		22	8.5	7000		MPCA
10/13/71		46	15	< 20		MPCA
09/02/71		64	22	230		MPCA
08/10/71		110	32	330		MPCA
07/13/71		190	48	4900		MPCA
06/08/71		370	82	7900		MPCA
04/07/71		100	27	50		MPCA
03/10/71		42	13	1700		MPCA
02/17/71		10	5.4	3300		MPCA
01/06/71		8	4.5	2400		MPCA
12/02/70		16	6.3	2200		MPCA
10/28/70		32	13			MPCA

Station Name ROCK RIVER BR ON STATELINE RD 10 MI S OF LUVERNE
STORET ID S000-097

Sample Date	Transparency (cm)	TSS (mg/L)	Turbidity (NTU)	Fecal Coliform (cfu/100 ml)	E. Coli (cfu/100 ml)	Date Source
10/14/70		39	17	4900		MPCA
09/15/70		310	12	1300		MPCA
08/18/70		100	28	170		MPCA
07/21/70		120	45	2400		MPCA
06/16/70		510	99	92000		MPCA
05/12/70		41	12	< 20		MPCA
02/04/70		5	3.3	50		MPCA
01/07/70		4	0.5	130		MPCA
12/03/69		16	6.6	50		MPCA
10/29/69		18	6.6	110		MPCA
10/08/69		30	13	1400		MPCA
09/09/69		61	21	130		MPCA
08/05/69		59	26	80		MPCA
07/08/69		1400	83	23000		MPCA
06/11/69		48	19	490		MPCA
04/29/69		18	9.2	130		MPCA
04/02/69		15	7.7	330		MPCA
02/05/69		6	3.1	2200		MPCA
01/08/69		2	5.2	1100		MPCA
12/04/68		18	7.8	210		MPCA
11/06/68		27	28	3500		MPCA
10/09/68		49	54	3300		MPCA
09/17/68		37	35	790		MPCA
08/13/68		81	84	1300		MPCA
07/17/68		130	110	3300		MPCA
05/18/68		1300	680	490000		MPCA
04/23/68		64	60	80		MPCA
03/05/68		9	13	< 20		MPCA
01/16/68		23	13	1100		MPCA
10/24/67		24	19	170		MPCA
08/29/67		84	10	270		MPCA
07/12/67		140	100	3300		MPCA
08/09/65		75	75	< 200		MPCA
07/13/65		87	35	700		MPCA
05/18/65		180	120	1100		MPCA
11/17/64		30	15	< 200		MPCA
08/13/64		9.2	11	500		MPCA
07/06/64		130	75	1300		MPCA
06/09/64		62	26	800		MPCA
04/28/64		60	40	200		MPCA
07/22/63		80	35			MPCA
05/07/63		72	20			MPCA
03/27/63		180	110			MPCA
09/18/62		32	23			MPCA

Station Name	ELK CK 3 MI SE OF LUVERNE, MN	ROCK RIVER AT CSAH 16 BR 2 MI S OF LUVERNE, MN
STORET ID	S001-360	S001-359
Sample Date	**Transparency (cm)**	**Transparency (cm)**
9/27/2005	7	5
9/15/2005	9	8
9/11/2005	10	10
9/4/2005	12	12
8/28/2005	11	14
8/21/2005	12	12
8/14/2005	14	13
8/8/2005	12	11
7/28/2005	13	8
7/15/2005	11	13
6/26/2005	10	12
6/15/2005	9	10
6/13/2005	11	14
6/5/2005	12	15
5/29/2005	12	18
5/22/2005	11	18
5/14/2005	17	16
5/7/2005	18	22
9/21/2003	8	9
9/13/2003	4	4
9/1/2003	11	9
8/31/2003	11	8
8/23/2003	13	10
8/17/2003	12	10
7/27/2003	10	16
7/15/2003	12	12
7/7/2003	15	9
6/29/2003	12	6
6/21/2003	16	8
6/14/2003	14	12
6/10/2003	12	12
6/1/2003	17	17
5/26/2003	16	17
5/19/2003	22	18
9/15/2002	13	9
9/4/2002	15	8
8/26/2002	9	8
8/19/2002	11	6
8/4/2002	10	9
7/27/2002	12	9
7/22/2002	14	12
7/14/2002	10	16
7/9/2002	10	15
7/2/2002	9	16

Station Name	ELK CK 3 MI SE OF LUVERNE, MN	ROCK RIVER AT CSAH 16 BR 2 MI S OF LUVERNE, MN
STORET ID	S001-360	S001-359
Sample Date	**Transparency (cm)**	**Transparency (cm)**
6/24/2002	*9*	*13*
6/16/2002	*10*	*13*
6/2/2002	*9*	*17*
5/27/2002	*13*	*21*
5/13/2002	*17*	*26*
5/5/2002	*18*	*24*
9/23/2000	*16*	*26*
9/18/2000	*14*	*19*
9/11/2000	*12*	*14*
9/5/2000	*13*	*13*
8/28/2000	*17*	*11*
8/21/2000	*18*	*10*
8/7/2000	*8*	*11*
7/31/2000	*15*	*14*
7/23/2000	*20*	*26*
7/16/2000	*10*	*13*
7/10/2000	*11*	*7*
7/4/2000	*20*	*14*
6/27/2000	*18*	*15*
6/19/2000	*16*	*25*
9/25/1999	*11*	*14*
9/12/1999	*11*	*14*
9/7/1999	*11*	*13*
8/30/1999	*9*	*11*
8/29/1999	*7*	*14*

Appendix C: Public Participation

DEC 2006

sharing and educational incentives. We expect our county allocation to be around $200,000.

LMO NEWS

Doug Bos

WHAT IS A TMDL?

You may have seen the acronym TMDL in print lately. TMDL stands for Total Maximum Daily Load and is describing the total amount of a pollutant that is allowed in a body of water according to the Federal Clean Water Act of 1972.

How does this affect Rock County? Parts of the Rock River and some of its tributaries such as the Elk Creek by Magnolia and the Champepadan Creek south of Kenneth have been listed as having pollutants that exceed the allowed amounts. The pollutants that exceed the federal limits or impairments in these streams range from E-coli Bacteria, ammonia, turbidity (basically suspended sediment), and mercury.

The Federal Clean Water Act requires the State to develop a plan to correct these stretches of stream that exceed the federal limit. On a local level we will be working on a plan to assess where these pollutants are coming from and how much is coming from each source. A plan to implement ways to bring the streams within the allowed levels of pollutants will be the next step to correcting the problem. There will be State and Federal dollars available to provide cost share for implementing ways of correcting the problem.

As we start this process we will have public meeting to solicit input. We hope that you will find time to help shape the future programs focused on correcting these TMDL problems. If you have any questions, please call our office at 507-283-8862 ext. 3.

JAN 2007

allocation of $100,000 for the first round of scoring and ranking that will end January 28th. Producers in the Rock River Watershed should definitely inquire into the program especially if the land they are farming is in the Well Head Protection Area for the City of Luverne, or Rock County Rural Water Well Head Protection Areas. These Well Head Protection Areas are sensitive features and applicants in those areas will receive priority for funding.

EQIP provides cost share assistance for structural practices and incentive payments for non structural practices. Our office staff will provide the technical design work. Producers can apply for financial assistance if a professional engineer needs to be hired for more complex designs.

LMO NEWS

Eric Hartman

I hope that you all had a very pleasant Christmas Holiday and that your New Year has been kicked off on a positive note. I know that I am looking forward, as we start this year, with some of my usual resolutions. I am hoping that 2007 may provide a few less of those challenges that 2006 offered for many, or even all of us, especially those involving energy costs, and that some of this disheartening "global tension" can diminish. I wish for your 2007 to be a most rewarding and prosperous year.

I just wanted to provide a little follow up we are going to become more familiar with in the months to come. Doug Bos provided an excellent snapshot in last month's newsletter, and since this is going to be an ongoing process, I wanted to make sure that we keep it in the public eye by raising the issue again. The two key terms are **Impaired Waters** and **TMDL's**. What does Impaired Waters mean? Simply put, what makes a body of water impaired is some sort of pollutant, designated by the Federal Environmental Protection Agency. These impairments are tied to federal standards linking back to the Federal Clean Water Act of 1972. What does TMDL mean? This stands for Total Maximum Daily Load. This simply means how much of a given pollutant a body of water can tolerate before it will not meet the standards of the Clean Water Act. What does this mean to us here in Rock County? We have the lower reaches of the Rock River that have been designated as Impaired Waters as the limits of some various pollutants are exceeding the limits of the Clean Water Act. What types of problem pollutants are present? The key problems that have been found, thus placing this portion of the Rock River on the Impaired Waters list is as follows: a) ammonia; b) fecal coliform bacteria; c) mercury; and d) turbidity (suspended sediment). What does this really mean? Impaired waters did not really seem to come to the forefront, in Minnesota, at least until some issues involving the expansion of urban development for the two communities of Annandale and Maple Plain. As a result of the requirements of the Clean Water Act and the Impaired Waters listings, the future development and expansion of these two communities has been placed on hold. We are in the beginning stages of our TMDL process, as our ultimate goal is to address and reduce these pollutants, and have the Rock River removed from the Impaired Waters list. This process will require involvement by us all. As Doug wrote in the last edition, we will have public involvement to draw some input. There will be programs developed to correct these problems and there will be state and federal monies to provide some cost share to help out, and we are not going to solve all of the problems overnight, either. We hope that you will take some time to help steer this process as it is for future generations to come.

USF & W RIVER EXCLUSION PROJECT

Justin Decker

The U.S. Fish & Wildlife Service is currently looking for landowners in Rock County who are interested in being part of a river exclusion project. USF & W is interested in increasing the quality of the Topeka Shiner habitat in the Rock River and its tributaries. They are proposing to cost-share watering systems along with setting up fencing to prohibit livestock from entering the stream or river. These areas could also be combined with EQIP to set up a rotational grazing program to further enhance the forage return on pastured areas along these streams in the Rock River Watershed. Interested land owners/renters should contact the Rock County Land Management Office to get more information.

CREP II

Justin Decker

The Conservation Reserve Enhancement Program is in its final year of sign-up. The program has had some success here in Rock County thanks to landowners interested in options for retiring poor crop production acres. These areas are along surface water, as well as in the Well Head Protection Area, and were not producing adequate returns in comparison to the yearly input costs. Theses landowners were also aware of the long term benefits this program has on water quality for the citizens of Rock County as well as the benefits to fish and wildlife habitat. With the high market prices we've seen this past year, its tough to look at conservation as a way of improving individual operations. However, trouble areas that are prone to poor production because of flooding, for example, don't care what the markets do! If the area doesn't produce a worthwhile crop, the input costs could outweigh the returns – even with high market prices. If you have an area in your farm that you would like to see a proposal for, please call or stop in the Land Management Office and put me to work. The proposal costs you nothing and will allow you to accurately compare your input dollars and yield returns to the incentive dollars given for CREP (or CRP) on any specific area.

FEB 07

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM

Our office is now in the process of accepting applications for the 2007 EQIP program. This year's priorities for funding will be for prescribed grazing, animal waste treatment, and structural practices treating Highly Erodible Lands (HEL). Rock County has received an initial allocation of $100,000 for the first round of scoring and ranking that will end January 28th. We will continue to accept applications after that date and approve contracts as additional funding is available. So far we have taken almost $400,000 in applications. It is unlikely that we will be able to fund that many applications this year but producers can apply now and try for next year's allocation. Producers in the Rock River Watershed should definitely inquire into the program especially if the land they are farming is in the Well Head Protection Area for the City of Luverne, or Rock County Rural Water Well Head Protection Areas. These Well Head Protection Areas contain sensitive features and applicants in those areas will receive priority for funding.

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LMO NEWS

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THE ROCK RIVER = IMPAIRED

The Rock River is on a growing list of polluted rivers in Minnesota according to the Minnesota Pollution Control Agency (MPCA). Water samples collected from the Rock River indicate the river does not meet state standards for water quality. The river has high concentrations of fecal coliform bacteria, an indicator of contamination from human sewage, livestock manure and wildlife. The Rock River also exceeds state water quality limits for turbidity, a measure of water clarity. Turbidity is the result of sediment, debris, nutrients, and plant matter entering the river.

To improve water quality, a Total Maximum Daily Load (TMDL) study is being developed for the Rock River. A TMDL study assesses the sources of pollution in the watershed to develop a strategy for improving the water quality. In essence, a TMDL is the calculation of the maximum amount of pollutant that a water body can receive and still meet water quality standards.

The Water Resources Center at Minnesota State University, Mankato is conducting the TMDL study with the assistance from staff at Rock, Nobles, Pipestone and Murray counties and the MPCA, to help identify the sources of pollution and find possible solutions. This TMDL study is funded by the Environmental Protection Agency.

A TMDL becomes necessary when water quality sampling shows a stream or lake exceeding water quality standards. As the state agency responsible for monitoring and enforcing water quality rules, MPCA assesses stream and lake data every two years to determine if the required standards are met. Any stream or lake not meeting water standards is classified as impaired. A stream or lake listed as impaired is required within 15 years to develop a TMDL plan.

TMDLs are part of a nationwide effort under the Federal Clean Water Act to identify and clean up pollution in streams, rivers and lakes. The Clean Water Act requires states to adopt water quality standards, assess the waters, and report impairments every two years. The federal Clean Water Act also requires the MPCA to conduct a TMDL study for each impairment. Rivers and streams may have several TMDLs, each one determining the limit for a different impairment. A TMDL study identifies both point and nonpoint sources of each pollutant. Monitoring results and computer modeling determine how much each pollutant source must reduce its contribution to assure the water quality standard is met.

The Rock River TMDL plan for fecal coliform bacteria and turbidity will be completed by the fall of 2007. Once the TMDL plan is approved by MPCA and EPA, funds will be available to assist in clean up efforts. For more information, call the Rock County Land Mgt at 507-283-8862 Ext 3.

MONDAY
February 26, 2007
Worthington, Minnesota

...uous options
...elicious meals
...age A7

Area wrestlers compete for ... spots at state ...
See Page B1

RIVER: To...

Repairing a watershed

Study being conducted on Rock River's high turbidity, bacteria levels

BY JULIE BUNTJER
DAILY GLOBE

LUVERNE — While the water in the Rock River may not be visible today because of the snow and ice, officials with the Minnesota Pollution Control Agency and Mankato-based Water Resources Center are concerned about what's flowing under the surface.

The Rock River made the impaired waters list for exceeding state standards for ammonia, fecal coliform bacteria and turbidity levels. It is among 60 lakes, rivers or streams statewide now being studied by MPCA and WRC, the agencies tasked with writing a Total Maximum Daily Load (TMDL) plan for the project.

With funding from the Environmental Protection Agency (EPA), WRC project coordinator Scott Matteson said the TMDL project will detail what is causing the high turbidity and levels of fecal coliform bacteria, and suggest ways in which landowners in the watershed can work to correct the issues. Because higher-than-normal ammonia levels were only present one year in the 10 years of data analyzed in the study, Matteson said the MPCA is working to get that segment of the project de-listed.

"TMDL defines how much of the pollutant can be in the water from point and non-point sources," Matteson said. "It's almost like a permit of how much can be in and still meet state water quality standards."

Once a lake, river or stream is placed on the impaired waters list, Matteson said the EPA requires the state to complete a TMDL study within 15 years. In Minnesota, the MPCA is responsible for ensuring the studies are completed.

Effects of impairment

Kelli Daberkow, watershed project manager with the MPCA's Marshall office, said the impairments in the Rock River "aren't extremely off the wall.

See **RIVER**, Page **A5**

from Page **A1**

"It's pretty typical for agriculture communities to see those kinds of ratios," Daberkow said. "Fecal coliform is more of an issue in Rock County just for the fact that you have a lot of pastures."

Daberkow said high levels of fecal coliform is a health threat, especially to people who may utilize the river for recreational use such as swimming. As for turbidity, there is no threat to humans — although it can impact fish, habitat and aesthetics.

"You don't really want to be swimming in a stream that's chocolate brown or pea green," Daberkow said.

Among the fish affected by high turbidity is the Topeka Shiner, considered an endangered species, and Daberkow said plant life in the water can also be affected if levels of sediment or algae block sunlight from streaming through the water.

Septic systems a culprit

Matteson said much of his time to date has been spent analyzing data from water quality samples. Hampering his efforts is the limited amount of data available — only 26 water quality samples have been taken from the Rock River over the course of the past 10 years.

Despite the limited number of samples, Matteson said data has revealed the streams have been affected by non-point source pollution, meaning the pollutants are entering the river in small amounts, but from a variety of locations. That information has led him to identify at least a couple of predominant sources for the pollution — outdated septic systems and feedlot run-off.

"We've got about 1,100 septic systems that are not in compliance," Matteson said.

Those septic systems are located within the 355,000-acre watershed that includes portions of Rock, Nobles, Murray and Pipestone counties.

"It's usually a mixture of septic systems or manure when it's applied too close to the stream and you get a rain event that washes it in," he added. "Tile drainage also (can pollute streams), and some feedlots have problems, too. Another major source would be cattle having access to the streams."

Study may lead to funding

Once the MPCA and WRC complete the TMDL study on the Rock River this fall, it makes possible potential funding to begin working on projects to help reduce contamination in the river. Daberkow said it would likely take one and a half to two years before funding would be received.

"Getting upgrades to the septic system, that's an easy one to take on," Matteson said.

Most of "the communities within the watershed have already completed septic upgrades, with Hatfield — which had 29 violations for improperly discharging effluent — planning to complete a septic system upgrade this year.

"Once that's complete, we really don't have any problem with incorporated communities," he said, adding that work would remain to get farms and rural home septics upgraded.

Additional work would likely be to get livestock producers to implement Best Management Practices (BMPs) in their operation relating to manure application.

"There may be incentives or cost-sharing on certain Best Management Practices," Daberkow said.

More information on the TMDL study in the Rock River watershed will be presented at 2:30 p.m. March 15 at Sharkee's Bar & Grill, 705 S. Kniss Ave., Luverne.

Minnesota Pollution Control deems Rock Riv

High concentrations of fecal coliform bacteria indicates human sewage, livesto

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The river has high concentrations of fecal coliform bacteria, an indicator of contamination from human sewage, livestock manure and wildlife.

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This TMDL study is funded by the Environmental Protection Agency.

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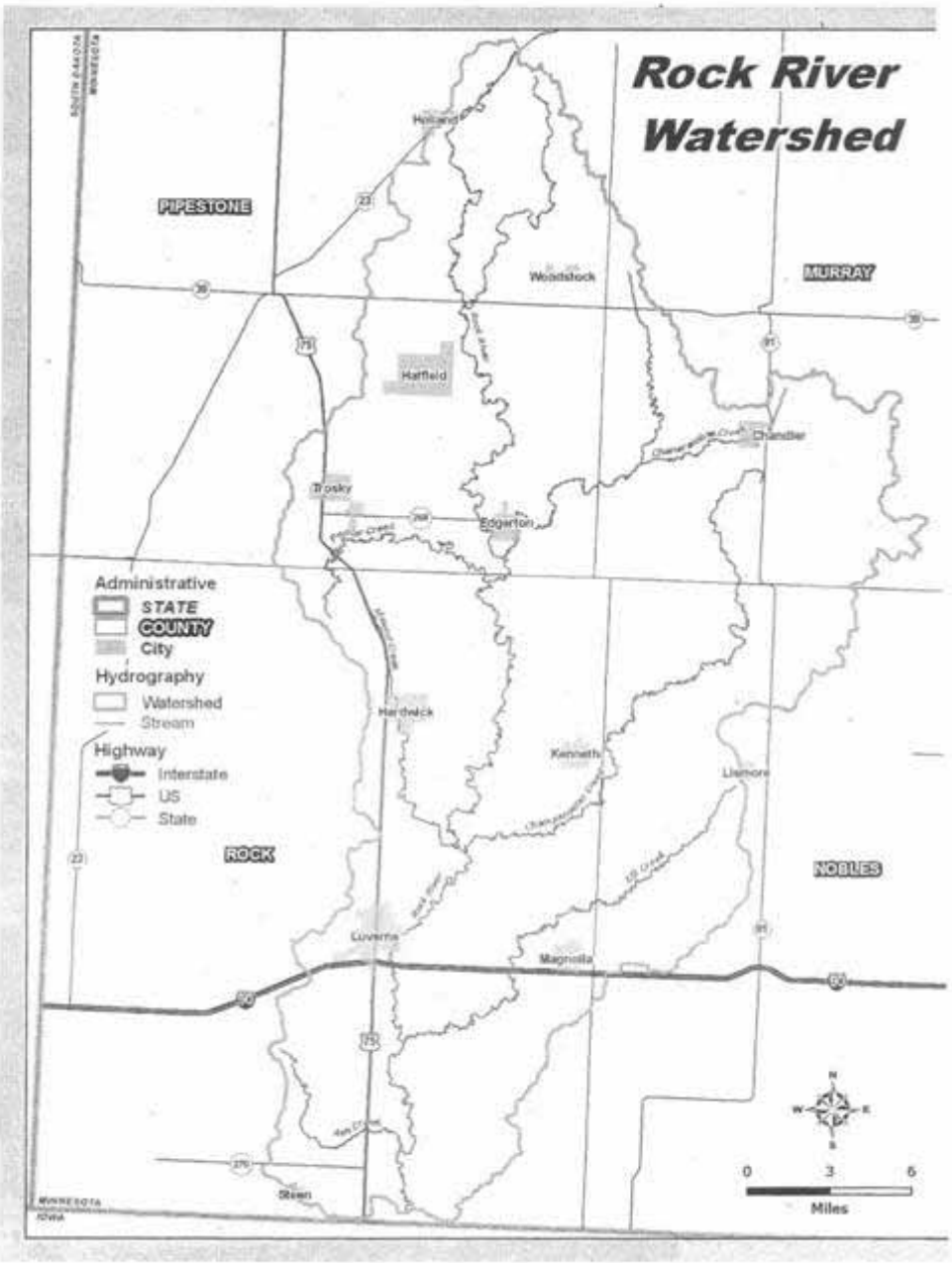

Pollution Control deems Rock River 'impaired'

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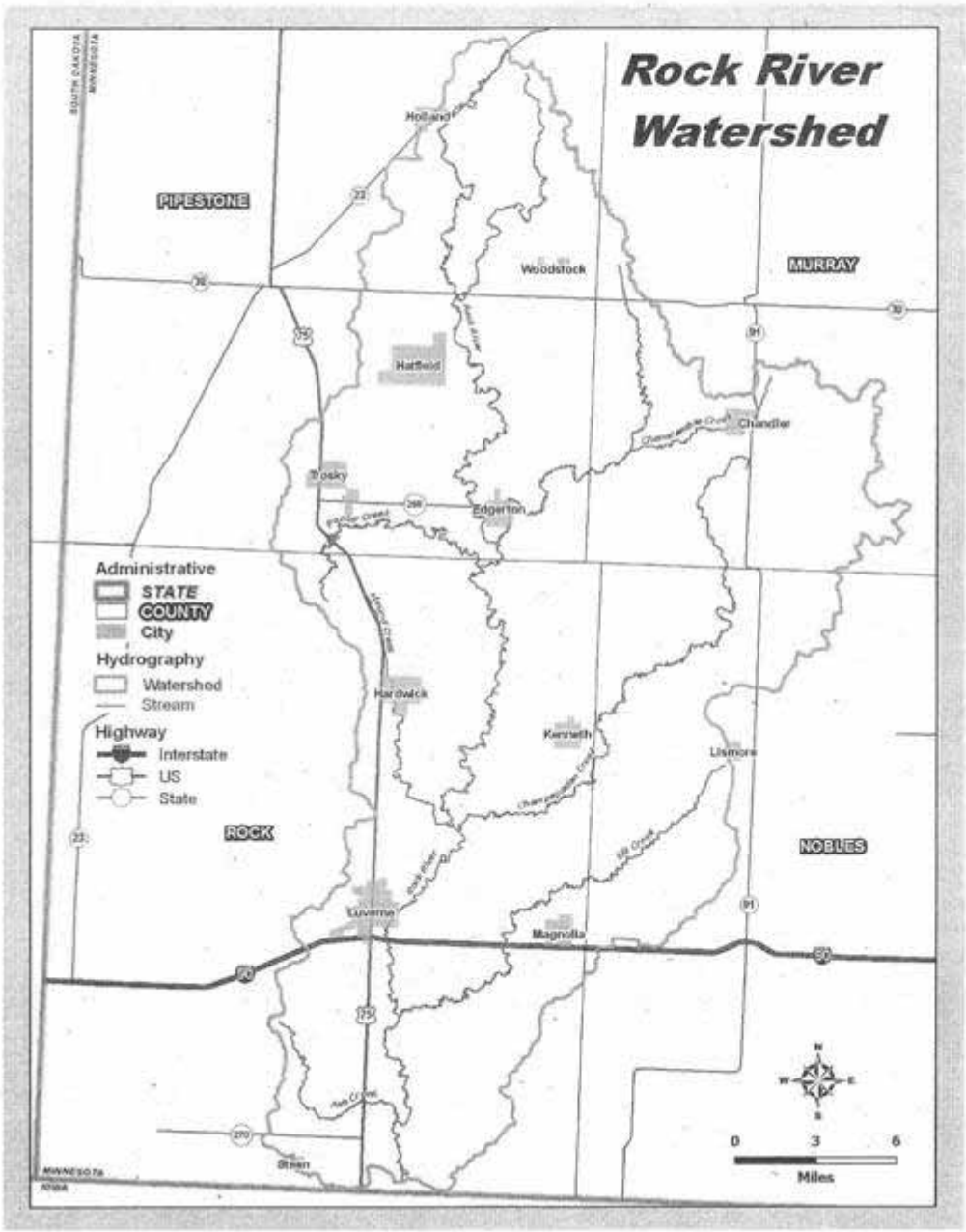

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Once the TMDL plan is approved by both MPCA and EPA, funds will be available to assist in clean up efforts.

For more information, call the Rock County Land Management at 507-283-8862 ext. 3.

Rock River is impaired, So, what's the problem?

Learn more about Total Maximum Daily Load by attending a meeting at 2:30 p.m. Thursday, March 15, in Sharkee's, Luverne

The Rock River is contaminated with high levels of fecal coliform bacteria and exceeds limits for stream turbidity, a measure of water clarity.

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Fecal coliform bacteria

Fecal coliform bacteria is present in the feces of all warm-blooded animals. The bacteria itself is usually not harmful, but high concentrations can indicate the presence of other harmful bacteria, viruses and/or parasites. Examples include the pathogenic strain of E. coli that is often linked to foodborne illnesses, as well as giardia and cryptosporidium. Recreational contact, especially swimming is not recommended when high concentrations of fecal coliform bacteria are present.

According to Scott Matteson, WRC project coordinator, the monitoring results collected by the MPCA, show the highest concentrations of fecal coliform during the warmer summer months.

Matteson also stated that precipitation can have a significant effect on concentrations found in the river. "Fecal coliform concentrations usually spike during or immediately following runoff from heavy rains," said Matteson.

The project is working to identify the major sources of fecal contamination in the river. The most likely sources include illegally discharging septic systems, runoff from manured fields, feedlots, storm sewers and wildlife.

Turbidity

Turbidity is a measurement of water clarity. A decrease in water clarity is caused by suspended and dissolved matter such as clay, silt, organic matter, algae and color.

Turbidity is recognized as an indicator of water quality. Increased turbidity levels limit light penetration and inhibit healthy plant growth. High turbidity can make it difficult for aquatic organisms to find food, affect gill functions and cause spawning habitat to become covered.

Monitoring results indicate the Rock River is well above turbidity limits set for TMDL criteria.

According to Matteson, "MPCA requires a TMDL to be developed when at least 10 percent of the samples exceed water quality standards. In the Rock River, 48 percent of the samples collected exceeded standards."

Sources of increased turbidity levels include erosion from fields or construction sites, urban runoff from precipitation, eroding stream banks, bottom feeders such as carp and excessive algal growth.

The TMDL will assess which of these are the largest contributors and develop solutions for improving water clarity in the Rock River.

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The Pipeliner

The Newsletter of the
Rock County
Rural Water District

541 150th Ave. Luverne, MN 56156 507-283-8886
www.rcrwd.com

March 2007

Rock County
Rural Water District's

Annual Meeting

Thursday, March 15, 2007

1:30 p.m.

Sharkee's (southeast door)

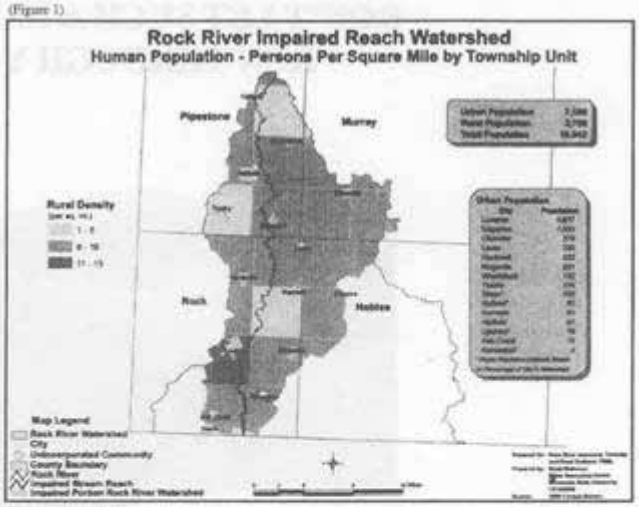
Fill your free cup with fresh coffee & your mind with knowledge.

This year's agenda includes the election of two new Directors, one to represent the Beaver Creek/Sprigwater area and one to represent the Luverne/Mound Township area. There will also be a review of the 2006 Water System Statistics, the presentaiton of the 2006 Auditor's Report, and a Lewis and Clark update. A door prize drawing will put cash and gifts into some of the lucky customer's pockets. If you cannot attend the meeting but would like to vote, you may recieve a proxy ballot by calling the RCRW office (507) 283-8886. This year a special meeting providing information about the Rock River TMDL study will be presented by Scott Mattson form the University of Minnesota, Mankato. A lunch will follow the meeting.

What's a "TMDL" anyway?

A TMDL is an acronym for Total Maximum Daily Loading. This term is applied to what contaminants are potentially able to be discharged into a lake, stream, or river. In our case the Rock River watershed is the focus. (Figure 1) As you can see, the Rock River watershed extends into four counties: Pipestone, Murray, Nobles, and Rock. The TMDL objective is to categorize the various types of potential pollutants, their location, and based on estimated calculations, their potential impact to the water quality of the river.

(Figure 1)

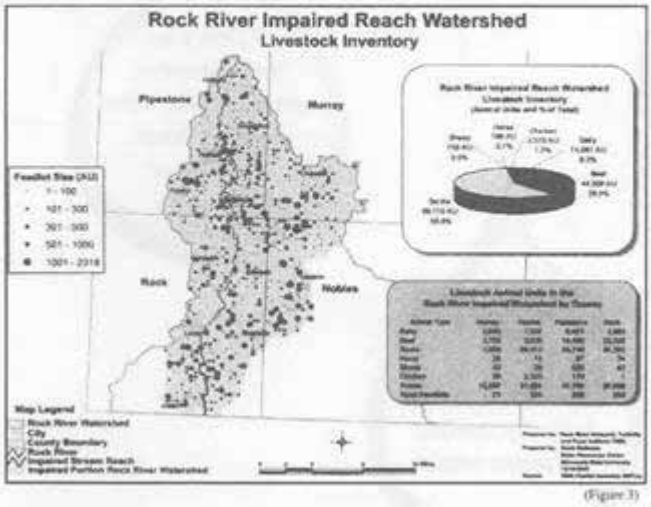


The Rock River is currently listed as exceeding water quality limits of ammonia, fecal coliform bacteria, and turbidity. For these reasons the Rock River is considered a relatively high priority for a TMDL study. EPA has granted funds to the Minnesota State University Water Resources Center to conduct a Rock River TMDL study. Recently local informal meetings have been held under the direction of the University's Scott Matteson and Minnesota Pollution Control Agency's Mark Hanson and Kelli Daberkow.

Rock River Watershed Population Inventories

Humans (2000 Census data)		Livestock (03 feedlot inventory)		Wildlife (DNR)	
Urban Population	7,186	Dairy	14,081 AU	Canada Geese	2,476
Rural Population	3,756	Beef	44,559 AU	Wild Turkeys	666
Total Population	10,942	Swine	89,110 AU	Pheasants	27,783
		Chicken	2,515 AU	Deer	2,223
Pets (American Vet. Ass.)		Horse	199 AU		
Cats	2,781	Sheep	758 AU		
Dogs	2,444				

Figure 2



(Figure 3)

The first step of the TMDL study is to pull together data that has been compiled with regard to human, livestock, and wildlife numbers. (Figure 2) This data is currently being analyzed for accuracy. The draft estimate of human population in the watershed is categorized in Figure 1. The draft estimate of livestock population, location, and size of operation is also being developed. (Figure 3)

If you are interested in learning more about the Rock River TMDL, make sure you attend the March 15th meeting following the Rock County Rural Water Annual Meeting. Scott and Kelli will be there with more information about the Rock River TMDL study plan. If you are concerned about the Rock River quality and willing to get involved, the TMDL team is looking for people who may want to serve on a public interest committee.

MAR 07

LMO NEWS

Eric Hartman

It is kind of hard to believe that just a little over a week ago we were digging out of the largest snow drops for quite a few years. Now we have the repercussions of the rapid snowmelt to contend with. Water, water everywhere!

I have one key item I want to bring up as part of our portion of the Rock County Ag Newsletter for this month. My co-worker, Doug Bos, has provided some more information, this month, involving TMDL's and Impaired Waters. Keeping this in mind, I will be very brief with my contribution.

This point was brought up to me just last week, as it has been quite some time since we have placed this information in the newsletter. Rock County does have a program that provides **Cost Share Funding** for **Well Sealing**. If you are interested in obtaining these funds for a well that has recently been sealed, or one that you are planning on have sealed, please contact our office and ask to have your name placed on our list, as well as the requirements involved in being eligible for this program. The funds available amount to up to 50 percent of the cost of sealing the well, or a maximum of $300, whichever is the lesser amount.

ROCK RIVER = IMPAIRED, WHAT'S THE PROBLEM?

Doug Bos

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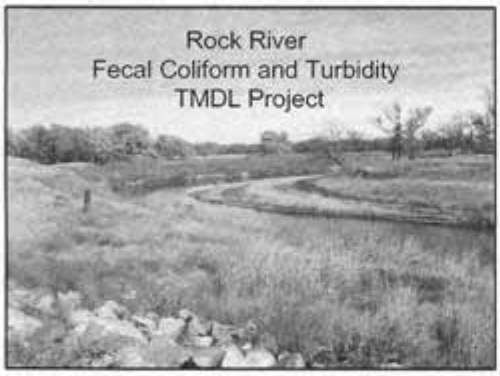
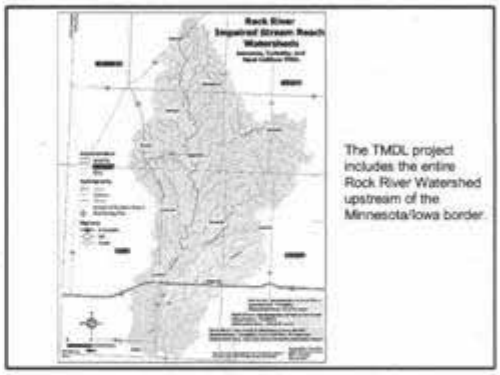
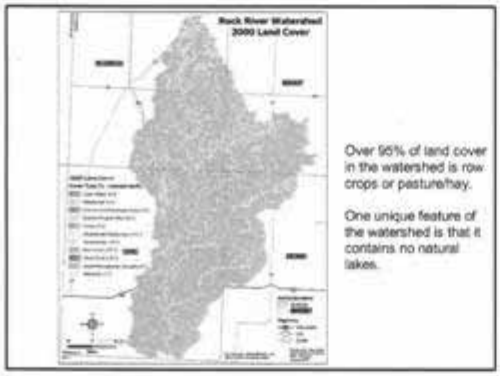
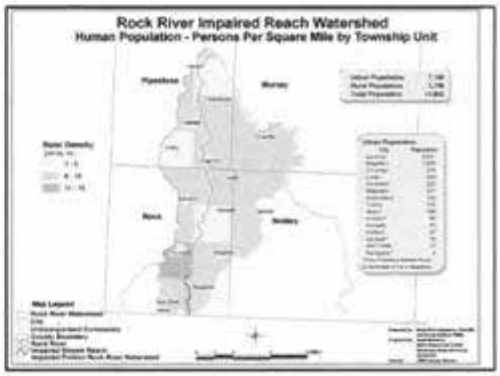
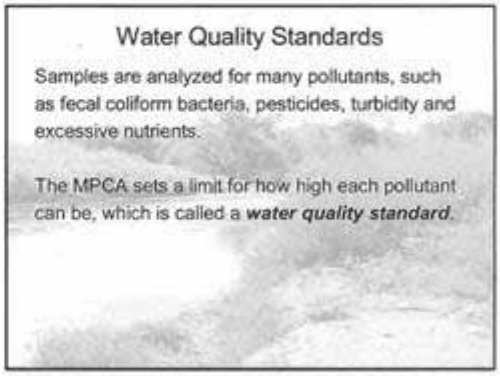
Presentation for 03-15-07 public meeting











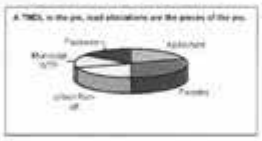
Impaired Streams

When a portion of a stream or river exceeds these standards, the stream is listed as an ***Impaired Water***.

This leads to the requirement of a ***Total Maximum Daily Load (TMDL)***. A TMDL is required for each impaired water.

What is a TMDL?

"Total Maximum Daily Load" is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources." - US EPA



What is fecal coliform bacteria?

Fecal coliform bacteria live in the digestive tract of warm-blood animals (humans, pets, farm animals, and wildlife) and are excreted in the feces.

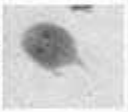
Why is it a concern?

Fecal coliform bacteria themselves are usually not harmful, but they can indicate the presence of waterborne pathogens.

Examples of Waterborne Pathogens

Giardia

A microscopic protozoan parasite that lives in the intestine of people and animals. There are approximately 970 to 1550* cases of giardiasis reported to the MN Department of Health each year.



Cryptosporidium

- Cryptosporidiosis (often called "Crypto") is a diarrheal disease caused by the protozoan parasite *Cryptosporidium* spp. Approximately 90-240* cases of Crypto are diagnosed in Minnesota each year.

* statistics reflect reported foodborne and waterborne sicknesses

Source: MN Department of Health

Water Quality Standard

- No month shall have a geometric mean above 200 org/100ml.

  The standard applies to April through October. A minimum of five samples is needed to calculate a geometric mean.

- Not more than 10% of individual values may exceed 2000 org/100 ml.

Where is the Rock River Impaired for Fecal Coliform?

What levels of fecal coliform are found in the Rock River?

Monitoring data for fecal coliform have only been collected from one site in the watershed, the Rock River at the Minnesota/Iowa border.

The only month with adequate sample collection for assessment purposes was August. August had a geometric mean of 626 cfu/100 ml.

Of the 26 samples collected, 42% exceeded 200 cfu/100 ml and 12% exceeded 2000 cfu/100 ml.

Sources of fecal coliform bacteria in the Rock River Watershed

Septic Systems and Unsewered Communities

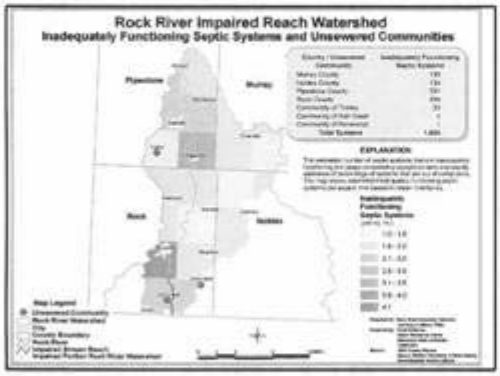
Based on county estimates, approximately 72% of the individual septic systems in Rock River Watershed are an imminent threat to public health or safety. This equates to an estimated 1,080 systems that disharge partially or untreated sewage to streams.

Surface discharge from non-compliant septic system that would be considered an ITPHS.

The communities of Trosky, Ash Creek and Kanaranzi are unsewered. Some homes and businesses in these communities also may have inadequate wastewater treatment.

Typical Septic System

Rock River Impaired Reach Watershed
Inadequately Functioning Septic Systems and Unsewered Communities



Wastewater Treatment Plants

Municipal wastewater treatment plants are required to monitor their effluent and meet a discharge limit of 200 organisms/100 ml fecal coliform concentration.

Wastewater Treatment Plant Violations and Bypasses

(2002-2006)

Violations

Hatfield – 29, treatment system planned for 2007
Edgerton – 2 in 2006
Holland – 2 in 2004, 1 in 2005

Bypasses

Woodstock, March 31, 2006 was the only reported bypass. This was following 3.5" of precipitation.

Stormwater Runoff

Fecal coliform bacteria and other pollutant concentrations in urban runoff can be as great or greater than those found in cropland, grazed pasture, and feedlot runoff (USEPA, 2001).

Open Feedlots

The majority of the 684 livestock facilities are confined operations with little runoff to surface water. Still, there is a significant number of open feedlots, some of which have pollution problems and pose a risk of fecal contamination.

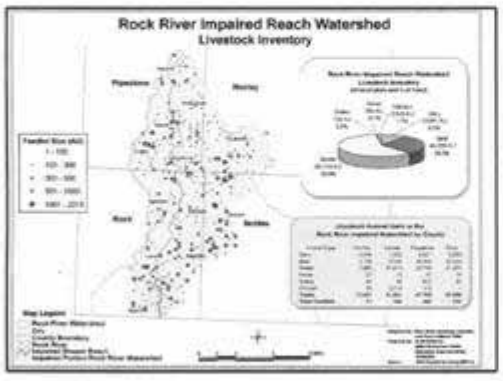
Open Feedlots with pollution problems

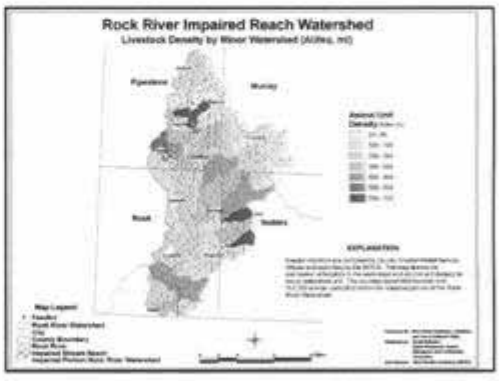
Land Application of Manure

Land application of manure can be a major source of fecal contamination. The significance of this source depends on how the manure application is managed, the rate and time of application, observance of setbacks from surface water, timely incorporation to avoid major runoff following a rain, residue management, and other practices.

Injected Manure

Surface Applied Manure





Over-grazed Pasture

Heavy grazing can compact soil, deplete plant growth, and produce bare spots that are prone to erosion and can carry fecal material into waterways.

Wildlife & Pets

Wildlife and pets can also contribute to bacterial contamination (e.g. Canada geese, deer, wild turkeys, pheasants, as well as dogs and cats).

What is turbidity?

Turbidity is the measurement of water clarity. It is measured in units called nephelometric turbidity units (NTUs). The greater the turbidity, the less the water clarity.

Turbidity

Turbidity is closely associated with two other stream measurements, total suspended solids (TSS) and transparency. These measurements can be used with turbidity data is not available.

TSS is a measurement of the amount of sediment and organic matter present in a water sample.

Transparency is a visual assessment of how far down into the water you can see using a "transparency tube".

Why is it a concern?

High turbidity/TSS and low transparency levels limit light penetration and inhibit healthy plant growth on the stream bottom. It also makes it difficult for aquatic organisms to find food, can effect gill functions and elevated amounts of sediment can cause spawning habitat to become covered.

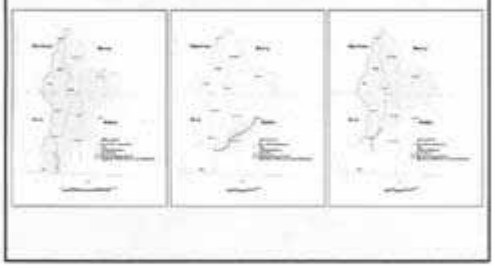
Surface Water Standards

Turbidity – Not more than 10% of samples shall exceed 25 NTU's.

TSS – Not more than 10% of samples shall exceed 66 mg/L.

Transparency – Not more than 10% of samples shall be under 20 cm.

Where is the Rock River Impaired for Turbidity?

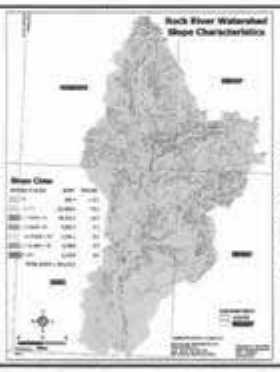


What levels of turbidity are found in the Rock River?

Sources of turbidity in the Rock River Watershed

- Suspended silt from soil erosion after storms.
- Stream channel erosion.
- Suspended organic matter, such as bacteria, plankton, plant material, etc.

There are 10,034 acres of highly erodible land in the watershed. 63% of this land is in pasture or hay and 31% in a row crop land cover.



Slope percentage is often a indicator of where significant soil erosion is occurring in a watershed. Depending on land cover, slopes above 12% often deliver the highest sediment loads to streams

Next Steps

- Develop fecal coliform and turbidity load allocations for each impaired stream reach.
- Provide draft TMDL review and a comment period by September 2007.
- After the EPA approves the TMDLs there is one year period for an implementation plan to be written.

Presentation for 03-15-07 public meeting

For More Information Contact:

Scott Matteson
Water Resources Center
Minnesota State University, Mankato
184 Trafton Science Center South
Mankato, MN 56001

507-389-5338 or scott.matteson@mnsu.edu

Here is an article that was in the Star Herald after I presented at the Township Officers Meeting.

March 20, 2007

WHEN IT'S "SOMETHING IN THE WATER," WE SHOULD ALL CARE

The Rock River is polluted, according to the Minnesota Pollution Control Agency. Specifically, the river is polluted with high concentrations of fecal coliform bacteria < an indicator of contamination from human sewage, livestock manure and wildlife. Beyond that, the Rock River also exceeds the limits of turbidity, a measure of water clarity. To improve both these pollution marks, the Water Resources Center at Minnesota State University, Mankato is conducting a Total Maximum Daily Load study on the Rock River. The initial reasons for the study may sound worse than what the river's actual condition is. The samples used to determine a need for the study were taken during one month, so this final study will bring the whole story out. We may find the Rock River de-listed as impaired. We should be glad to have this study underway because good water quality is good for all of us. Sources of the pollution (or that the river isn't as polluted as initial tests showed) could be outcomes of the TMDL study. Turbidity is a new term to many of us. Farming too close to riverbanks can cause more turbidity, as does overgrowth of algae. The MPCA requires a TMDL plan when at least 10 percent of the samples exceed water quality standards. In the Rock River, 48 percent of the samples exceeded turbidity standards. While big livestock producers get the brunt of criticism, small operations with open feedlots can have runoff issues that cause even more pollution. Septic systems of rural homeowners can be fecal pollution sources as well. People can get ill if they swim in polluted waters, but beyond that, it's also important to remember that humans are at the top of the food chain, and a healthy water supply equals healthy people. After all, fish can't spawn in water with high turbidity. This TMDL study will be completed by the fall of 2007. Until then, we should all take care that we are being responsible residents of the Rock River area. The local Land Management Office, 283-8862, is a helpful and reliable resource for questions dealing with land use of any kind.


Rock River TMDL Watershed Tour
Jasper
Hardwick
Kenneth
Luverne
Magnolia
Beaver Creek
Hills
Steen
M
L
K
J
I
G
H
A
F
E
B
D
C
0 1 2 4 6 8 10 12 14 16
Miles

Rock River Watershed Tour, Rock County

A. **Feedlot:** Producer has 290 Cattle on site, has a runoff issue, plans on using Feedlot Cost Share Dollars to make a correction that will be designed by Joint Powers Engineering.
B. **Unincorporated City of Ash Creek:** Small village with about ½ of the residences with non-compliant septic systems. Also 2 junk yards that are in the process of cleaning up that do not have permits.
C. **Sampling Point:** Sampling point of the Rock River along the State Line between Iowa and Minnesota.
D. **Pasture:** Producer is working on creating a grazing plan; also a neighboring site that has been overgrazed, increasing the potential problem of soil erosion.
E. **Stream Bank Erosion and Stabilization:** Land owner has worked with USFW to stabilize stretches of stream bank but there are many more miles of stream bank sloughing off into the stream.
F. **Rural Water Wells:** Rock County Rural Water serves approximately 2300 people, has 13 wells, all in the area of the Rock River. The USGS has done an interconnect study and found that a substantial amount of water from the river enters the aquifer and exits the aquifer back to the Rock River.
G. **Cattle Feedlot:** Formerly an open lot this feedlot operator chose to go with total confinement and this building is called a monoslope.
H. **Stream bank Stabilization & Open lot Feedlot:** Eroding banks along the river used to be armored with concrete before the DNR enforced no concrete can be used unless covered with natural rock. (this greatly increased the cost) Also livestock producer created a clean water diversion and grass filtering to prevent runoff contaminating the river.
I. **Gravel Pit:** The Rock River valley has many deposits of gravel which are currently being mined in approximately 6 pits.
J. **Blue Mound:** Interesting topography and geology created by the outcroppings of Sioux Quartzite.
K. **Topeka Shiner:** This site is a Topeka shiner sample site on the Mound Creek.
L. **Cattle Feedlot:** This larger feedlot used cost share and Joint Powers Engineering to design a grass treatment filter strip to treat the runoff. (Farm ground to the south of the Hwy is flooded frequently and the owner was looking at some type of conservation program to enroll the ground).
M. **City of Leota:** See describtion

Bos, Douglas - Luverne, MN

From: Wayne Smith [wsmith@co.nobles.mn.us]
Sent: Monday, June 11, 2007 10:01 AM
To: Bos, Douglas - Luverne, MN
Subject: Leota

Hi Doug-
The Village of Leota is an unincorporated community of 500 people in NW Nobles County. Working together they have established a Community Sewer Board and a Community Water Board. Several years ago they received funding for a new sewer system. Every home has it own septic tank and that drains to the community ponds for treatment. Their drinking water supply management area has been identified by MDH and they are actively working at coming up with a WHP plan. Both project have truly been grass root projects, people working together to do what is best for the community with out the benefit (or hindrance) of a City Council or other local unit of government. They have done an excellent job of bring their residents into compliance with septic rules; unfortunately most of the farms surrounding the community are still out of compliance. My estimate for farms in Leota Township would be 80-85 percent.
I am sorry I will not be able to make it today.
Wayne-

—June 07

Stay eligible for Farm Program Benefits by reviewing your **Highly Erodible Lands (HEL)** Conservation Compliance plan. If you are making changes to your tillage and planting operations, or have erosion concerns our office will need to revise your plan.

CONSTRUCTION ACTIVITIES

Our office has completed layout of 9 construction projects this spring. This year we tried a new approach by having land owners seed construction sites to small grains. The landowners are being reimbursed $80 per acre for the area where the conservation practice is to be installed. This funding is through the Rock County Soil and Water Conservation District. The advantage is to allow more time for our layout and design and to attract more competitive bids from contractors who are more available at the time the small grains are harvested than any time of the year. Our objective is to complete all practices by Sept 15th and then get ready for the fall construction season.

The Natural Resources Conservation Service Cultural Resource person will be taking a tour in Rock County June 28th. He will be investigating some of our proposed construction sites for impacts to cultural resources. Rock County was mapped by surveyors in the mid-19th century and the resulting maps produced from that survey identified locations of Native American settlements, tanneries, fur trading posts, maple sugar camps, trails, roads, and river crossings. Very interesting stuff! All of this information is confidential and accessed only through requests through NRCS's Public Information Officer.

LMO NEWS

Doug Bos

TMDL UPDATE

We have been working on developing a TMDL Assessment plan for the Rock River. Once we have this done it will be reviewed by the EPA and be placed on public notice. After the review and public notice a TMDL Implementation plan will need to be developed. This Implementation plan is the "how to" plan. It will outline what we need to do to correct the impairments of the Rock River. To develop this plan we are encouraging as much public input as possible. We will be contacting organizations and individuals that have a stake in this process and welcome any persons that would be interested in serving on a TMDL committee.

Each year we are required to inspect a percentage of our feedlots that are due for re-registration. With the process of the TMDL we are focusing on feedlots that are in the Rock River watershed. We are assisting these producers by ensuring their compliance with the State feedlot rules and also focusing on nutrient management planning. By being proactive these producers will be doing their part in improving water quality. If you have any questions or concerns please feel free to contact our office.

October 2007

NRCS NEWS

Kurt Halfmann

NRCS' EQIP -- LANDOWNER'S BEST BET FOR FUTURE

For those involved in agriculture, it's a busy time of the year—so much to do, so much to wrap-up. Even though you're busy, this might be the best time to take a moment and start planning for your future a bit. Your future in EQIP, that is.

Details, rules and language of the new Farm Bill are still being finalized. No one knows when the final draft will be written or made into law. Chances are you have issues on your farm that need solving today, not tomorrow. Not next year. You may have erosion, water quality concerns, or nutrient management issues. Maybe you have a cattle operation that needs some updates or new practices.

While much of what the new Farm Bill holds for payments or caps or loans is undecided, one thing NRCS is sure of right now is USDA's Environmental Quality Incentives Program. EQIP has been around since 1996 and since then has grown in popularity with increased funding levels. It's NRCS' principal program for delivering conservation in Rock County. EQIP supports the needs of livestock operations and ag operations without livestock.

Rock County has prioritized the Drinking Water Supply Management Areas of the Rural Water system and City of Luverne, and the TMDL listed reaches of the Rock River for funding. Last year our office allocated over $400,000 for projects in the county.

EQIP cost-share rates cover a wide range of conservation practices—from conservation tillage to Comprehensive Nutrient Management Plans, terraces, grassed waterways, water and sediment control basins, shelterbelts, watering facilities and fencing for live stock—EQIP has nearly everything Rock County operations may need to solve the resource problems they face. EQIP and other NRCS cost-share programs can make operations environmentally sound and sustainable for the long haul. Producers can expect a sign up for EQIP late fall 2007.

LMO NEWS

UPDATE ON ROCK RIVER'S TMDL PROCESS

Doug Bos

The Land Management staff has been meeting bimonthly with Mankato State University, Pipestone, Murray, and Nobles counties, City of Luverne, Rock County Rural Water, MPCA, NRCS, and DNR to develop a TMDL assessment plan. The draft TMDL Assessment Plan is being reviewed and will be submitted to EPA for approval. We will then have a public meeting to accept input on the assessment plan and start the development of a TMDL Implementation Plan. If you remember from earlier newsletters the Rock River is listed for turbidity (floating sediment), Fecal Coliform (e-coli bacteria) and mercury impairments.

The public meeting will be an opportunity to comment on the TMDL assessment plan and we will also be looking for persons willing to be part of the development of the TMDL implementation plan. An implementation plan spells out what we need to do to correct the impairments of the Rock River. This plan could have an impact on many different issues ranging from future developments (businesses or industry) in the City of Luverne, septic systems, feedlots, and manure application in the Rock River Watershed. **This will be an opportunity to be part of the development of the implementation plan.** We will be sending out a separate newsletter to further explain and announce the meeting date and time. If you have questions before, please contact our office at 507-283-8862 ext. 3.

2008 TREE PLANTINGS

Justin Decker

Tree orders for spring 2008 plantings are being taken right now. We have several different species of deciduous trees and shrubs as well as a variety of evergreens to choose from. Trees can enhance your property, increase privacy, reduce or eliminate sown buildup on driveways and around buildings, and are a great habitat for a variety of wildlife. Call the Land Management Office and we can discuss your plans and give you a plan map along with a cost estimate for your project. The Soil and Water Conservation District offer 50 percent cost-share (maximum of $800 per project) on the trees and matting if they are planted by the our staff. Call or stop in before November 15th to place your order from the following list of available trees:

DECIDUOUS TREES
Red Oak
White Oak
Bur Oak
Paper Birch
Hybrid Willow
False Indigo
Little Leaf Linden
Silver Maple
Sugar Maple
Norway Maple
Hackberry
Cottonwood

EVERGREEN TREES
Eastern Red Cedar
Black Hills Spruce
Colorado Blue Spruce
Ponderosa Pine

SHRUBS
Redosier Dogwood
Honeyrose Honeysuckle
Late Bloom Lilac
Common Lilac
Amur Maple
American Plum
American Cranberry Bush

Rock River Watershed
TMDL NEWSLETTER

Fall 2007

WHAT IS A TOTAL MAXIMUM DAILY LOAD (TMDL)?

Every two years the state of Minnesota publishes a list of "impaired" waters that do not meet water quality standards. Once a river or lake is put on the list, a Total Maximum Daily Load (TMDL) study is required. The Rock River is listed for both fecal coliform bacteria and turbidity impairments. In 2006, the Water Resources Center at Minnesota State University, Mankato (MSUM) secured a U.S. Environmental Protection Agency grant to conduct a TMDL on the Rock River Watershed.

According to the federal Clean Water Act, the TMDL is a calculation of the maximum amount of pollutant that a stream or lake can receive and still meet water quality standards.

We can boil down the TMDL process into three major elements:

- **Evaluating** the water quality problems,
- **Determining** the pollutant sources that caused the problems,
- **Developing** a plan for correcting the problems. This plan is a tool for implementing measures to meet water quality standards.

Rock River near Luverne

Rock River TMDL Overview

In 1994, the Minnesota Pollution Control Agency (MPCA) determined the Rock River was impaired for fecal coliform bacteria at the Minnesota/Iowa border. MPCA also added turbidity in 2002. In 2006, two additional sites between the MN/Iowa border and Luverne were listed for turbidity.

The Water Resources Center at MSUM is working with staff from local, state and federal agencies to identify sources of pollution and assess possible solutions.

A TMDL implementation plan will be developed once the study is complete. The plan will provide strategies for implementation of practical management measures needed for the Rock River to meet water quality standards.

Citizen participation is an important component of the TMDL process. **We are seeking public input to help develop the implementation plan.**

Ultimately, the goal of the project is to secure funding to incorporate practices to reduce fecal coliform bacteria and turbidity numbers. Residents will have an opportunity to receive cost-share and low-interest loans to help protect, improve and restore water quality in the Rock River.

Project Summary

What? - A water quality project to clean up the Rock River.
Where? - Rock River Watershed
When? - The project started in late 2006 and will be completed in 2008.
Why? - The Minnesota Pollution Control Agency has deemed the Rock River impaired for recreation and aquatic life. Fecal coliform bacteria and turbidity are the primary impairments.
How? - Data was gathered and analyzed by Minnesota State University, Mankato and put into report. The draft report can be found at: http://www.pca.state.mn.us/water/tmdl/index.html
Who? - A group of local, state and federal personnel have been meeting assisting with the report.
Why should you care? - You live in this watershed and this is your river. We need your input in writing a plan to clean up the river. Ultimately, the goal is to receive money to assist with the Rock River clean up.

FECAL COLIFORM BACTERIA

This is a group of bacteria that passes through the fecal excrement of humans, livestock and wildlife. These bacteria live in the digestive tract of warm-blooded animals and aid in the digestion of food.

Fecal coliform bacteria are usually not harmful themselves, but indicate the presence of other disease-causing bacteria. Testing directly for pathogens can be difficult, expensive and even hazardous. High fecal coliform concentrations indicate a likelihood that the river is polluted with disease causing bacteria and viruses.

Sources of Fecal Coliform Bacteria

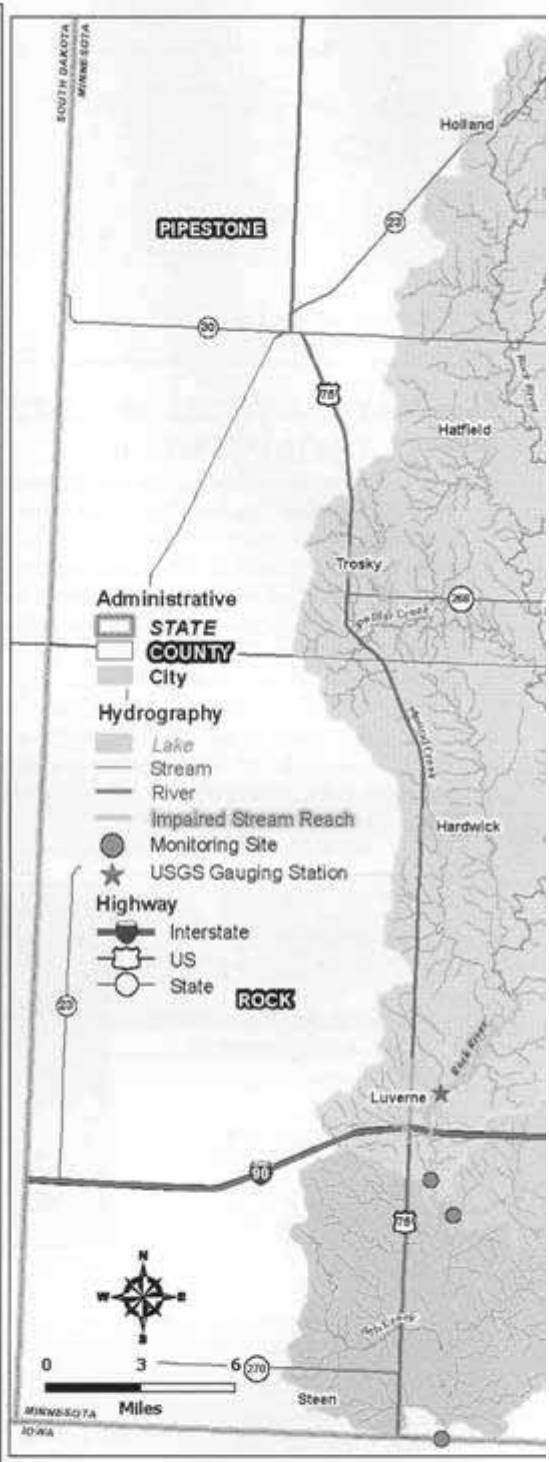
- Enter rivers through direct discharge of waste from mammals and birds, from runoff, and from untreated human sewage.
- In aquatic environments fecal coliform bacteria indicate the water has been contaminated with the fecal matter of humans or animals.
- Septic systems that are out of compliance can allow untreated human waste to flow into nearby streams and lakes.
- Agricultural practices such as allowing animal wastes to wash into nearby streams during the rainy season, spreading manure and fertilizer during rainy periods, and allowing livestock watering in streams can all contribute to fecal coliform contamination.
- In urban areas, runoff from roads, parking lots, and yards can carry animal waste to streams through stormwater systems.
- Wildlife also may be a source of bacteria; however in most locations the contribution is relatively minor.

Septic systems that illegally discharge to the river are a source of fecal contamination.

Cattle with access to streams are another source of contamination.

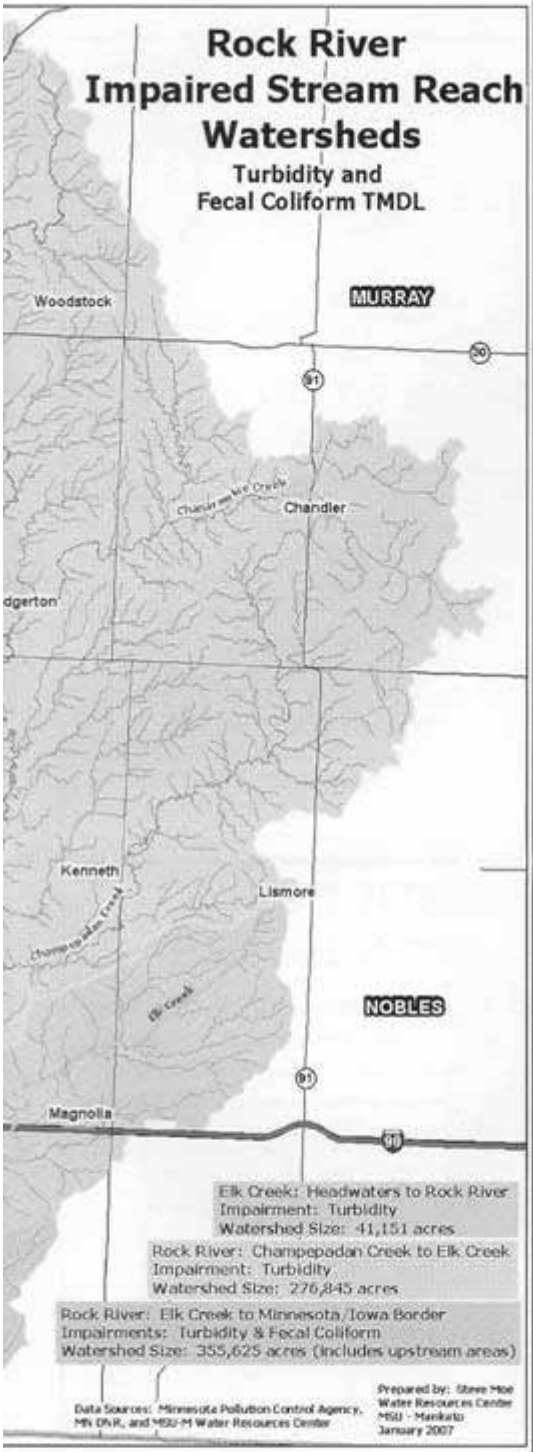
Concerns of Fecal Coliform Bacteria

- Once in a stream, lake or other waterbody, bacteria can infect humans through contaminated fish, skin contact, or ingestion of water.
- Bacteria can settle out of water into bottom sediments, where they can persist and even multiply for weeks or months in the warm, dark, moist and organically-rich conditions. When the sediments are stirred up, the bacteria become re-suspended in the water.
- Some waterborne pathogenic diseases include ear infections, dysentery, typhoid fever, viral and bacterial gastroenteritis, and hepatitis A.
- The presence of fecal coliform tends to affect humans more than it does aquatic creatures, though not exclusively.
- Escheria coli (*E. coli*) is the most common strain of fecal coliform bacteria. Some strains of *E. coli* can cause severe illness.
- Swimming should not be allowed if the level of fecal coliform bacteria reaches 200 organisms per 100 milliliters of water.
- In the Rock River, the water quality standard for fecal coliform was exceeded during the months of August and September.
- The highest concentrations of fecal coliform bacteria were found during and after rain events.



Rock River Watershe

City of Luverne
Minnesota Department of Natural Resources
Minnesota Pollution Control Agency
Murray Co. Environmental Services and SWCD
Natural Resources Conservation Service
Nobles Co. Environmental Services and SWCD



d Technical Committee

Pipestone County Planning and Zoning and SWCD
Rock County Land Management Office and SWCD
Rock County Rural Water System
WRC, MN State University, Mankato
US Fish and Wildlife Service

TURBIDITY

Turbidity is a measurement of water clarity. Turbidity is caused by soil particles, algae, dissolved salts and other organic materials that scatter light in the water column making the water appear cloudy or turbid.

Turbidity itself is not a major human health concern, but underlines a diverse list of water quality problems. Turbidity is linked to the look of the water and therefore the public's perception of water quality. People generally prefer water of high clarity for recreation and consumption. Excessive levels can harm aquatic life, hide recreational hazards and harbor high concentrations of bacteria and viruses.

Sources of Turbidity

- Soil erosion including from fields, construction sites, etc.
- Wastewater and septic system discharge
- Urban runoff
- Eroding stream banks and gullies
- Large numbers of bottom feeders (such as carp), which stir up bottom sediments
- Excessive algal growth
- Decaying plants and animals
- Flooding and high flow rates (stream bank erosion)

Soil erosion from fields after heavy rains is one source of turbidity in the Rock River.

Concerns of Turbidity

- Turbidity limits light penetration and hinders photosynthesis, thereby altering the composition and distribution of aquatic plant communities.
- Turbidity is detrimental as excessive levels can harm aquatic life. Aquatic organisms can have trouble finding food, gill function can be affected and spawning beds may become covered.
- Excessive fine sediment can fill the small spaces between the river bed gravel and reduce suitable habitat for many benthic invertebrates (e.g. mayflies, stoneflies, and mussels) and spawning fish.
- Sediment absorbs solar energy, raising water temperatures and reducing the amount of dissolved oxygen.
- Sediment also carries nutrients, particularly phosphorus and toxic substances, such as PCBs and mercury. There may be released in the environment after sediment settles in the river bed.
- Turbid water may be composed of organic and/or inorganic constituents. Organic particles may increase the possibility for waterborne disease.
- High turbid waters may be hazardous to the welfare of swimmers and boaters. Turbidity may obscure potentially dangerous obstructions such as boulders and logs.
- The water quality standard for turbidity is 25 NTU.
- Fifty percent of the water samples collected from Rock River (1997-2006) exceeded the standard. This was most common after rain events.

Rock County Land Management Office
311 W. Gabrielson Road
Luverne, MN 56156

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Pollution is Threatening the Rock River

TMDL PUBLIC OPEN HOUSE

Join us Thursday, January 24th, 2008 to learn about water quality concerns in the Rock River. We will be discussing the sources of the pollution and possible solutions. **This is your opportunity to provide input**.

Location: Edgerton Ambulance Garage
Address: 1000 South Main, Edgerton
Open House: 2:30 p.m.
Presentation: 3:00 - 4:00 p.m.

Location: Rock County Family Services Bldg.
Address: 2 Roundwind Road, Luverne
Open House: 6:30 p.m.
Presentation: 7:00 – 8:00 p.m.

The Rock River TMDL report can be found at::
www.pca.state.mn.us/water/tmdl/index.html

This newsletter is sponsored by the Rock River TMDL Project for Fecal Coliform and Turbidity. This publication is funded through U.S. Environmental Protection program from the Water Resources Center, Minnesota State University Mankato (MSUM). MSUM is an equal opportunity organization and employer. Questions and comments can be directed to:
Scott Matteson at 507-389-5338 or E-Mail: scott.matteson@mnsu.edu
184 Trafton Science Center S; Mankato, MN 56001

Minnesota Pollution Control Agency

January 2008

WaterFront Bulletin

Water Restoration and Protection: Headlines and Deadlines

WaterFront is a web-based bulletin featuring updates on impaired waters, watershed project funding and water restoration and protection activities underway throughout the state. *WaterFront* is published to share information with internal MPCA staff and external watershed partners.

In this issue

WATER QUALITY RULES

MPCA Citizens' Board Adopts Rule Revisions

The Minnesota Pollution Control Agency Citizens' Board recently adopted amendments to the state's water quality rules. Rules affected include the following.

1. Amended, Chapter 7050: Water Quality Standards for Protection of Waters of the State
2. Added, Chapter 7053: Effluent Limits and Treatment Requirements for Discharges to Water of the State
3. Repealed, Chapter 7056, Parts 0010 and 0040: Classification for Use and Standards for Select Reaches of the Mississippi River and its Stream Tributaries
4. Repealed, Chapter 7065, Parts 0010 and 0260: Specific Effluent Limits for Select Watersheds

For more information on the rule revisions, visit the MPCA web site at http://www.pca.state.mn.us/water/standards/rulechange.html.

PROJECT UPDATES

Rock River Fecal Coliform and Turbidity TMDL

The public comment period for the Rock River Fecal Coliform and Turbidity TMDL is December 31, 2007 through January 31, 2008. There is one impaired reach for aquatic recreation and life and three reaches impaired for aquatic life that are addressed in this TMDL. The Rock River is located in southwest Minnesota and drains into Iowa where the Rock River joins the Big Sioux River and eventually the Missouri River. The assessment was completed by Minnesota State University-Mankato Water Resources Center. There has been an active local involvement in the completion of this TMDL. For the draft report, please visit http://www.pca.state.mn.us/water/tmdl/project-rockriver.html

Daberkow, Kelli

From: Bos, Douglas - Luverne, MN [Douglas.Bos@mn.nacdnet.net]
Sent: Monday, January 07, 2008 11:38 AM
To: alais@cityofluverne.org; chansen@co.murray.mn.us; Daberkow, Kelli; dcook@iw.net; Gehrke, Arlyn; Hartman, Eric; Justin.Decker@mn.nacdnet.net; Krier, Kyle; kurt.halfmann@mn.usda.gov; Edward.Lenz@mn.nacdnet.net; Matteson, Scott K; Smith, Wayne; Tom.Kresko@dnr.state.mn.us
Cc: Daberkow, Kelli
Subject: TMDL meeting notice


Suggestions for Improving the ...

Invite to Open House II-Stake...

To TMDL members,

Attached you will find a suggestion page for input and an invite for those organizations in your county that would have an interest in the water quality of the Rock River. Here are the organizations that I am sending to in Rock County. To Nobles, Murray, Pipestone, you may have others that we don't in Rock County.

Rock County Cattleman's

Rock County Pork Producers

Rock County Dairy Association

Rock County Corn and Soybean Producers

Rock County Pheasant Forever

Rock County Turkey Federation

Beaver Creek Sportsman's

Brandenburg Foundation

Rock County Farm Bureau

Blue Mound State Park

Townships in the watershed,

I am sending a copy of the TMDL Public Open House Flyer (from MSU), a Suggestion Page and an invite to each organization. You can adapt any of them if you prefer a different wording.

Thanks,
Doug Bos, Assistant Director
Rock County SWCD/Land Management
507/283-8862 ext 3
Fax 507/283-5006

Rock County Land Management Office

311 West Gabrielson Road Ste 5
Luverne, MN 56156
24 hour Fax: (507) 283-5006

Soil & Water (507) 283-8862 **Zoning** **Ag Inspection** **Environmental** **Transfer Station** (507) 283-5005

MEMO

TO: Rock River Stakeholder Organizations

RE: Impairments of the Rock River

The Rock River has been listed on the EPA 303(d) list as an impaired stream because it exceeds the Federal water quality standards for fecal coliform and turbidity. EPA requires an assessment to be developed that addresses the Total Maximum Daily Load (TMDL) of pollutants. Rock, Nobles, Pipestone, and Murray Counties, in partnership with Mankato State University and MPCA, have developed a TMDL assessment. It's on the web at http://www.pca.state.mn.us/water/tmdl/project-rockriver.html. The next step is to write an implementation plan. The implementation plan will spell out activities that can be done to correct these impairments of the Rock River.

We would like your input on developing the implementation plan over the next few months. The implementation plan is a long-range plan that will address many land use issues ranging from land application of manure, overgrazing pastures, failing septic systems, and soil erosion.

On **January 24**, there are two public meetings scheduled in Edgerton and Luverne for the general public to learn and comment on the Rock River TMDL assessment. These meetings will provide you with valuable background information that will be used in subsequent meetings**. It would be very beneficial for you to attend one of these meetings**. The Edgerton meeting will be at the ambulance garage, 1000 S. Main, starting with an informal open house at 2:30 p.m. followed by a presentation at 3 p.m. The Luverne meeting will be at the Rock County Family Services building, 2 Roundwind Road, with an open house at 6:30 p.m. and presentation at 7 p.m.

Your organization has a stake in future land use concerns in the watershed of the Rock River. If you are unable to attend the public meeting or are not interested in providing input for the implementation plan, please let me know. Thank you in advance for your interest and we look forward to seeing and/or meeting you on the 24th.

Enclosed you will find an input form you may bring to the meeting or send in if you are unable to attend. Also enclosed is a newsletter with more information about the project.

Sincerely,

Doug Bos, Asst Director
Rock County SWCD/Land Management Office

Suggestions for Improving the Rock River
By addressing fecal coliform bacteria and turbidity

Coliform Bacteria-
Causes can include feedlot runoff, non-compliant septic systems, improper land application of manure, cattle in streams and wildlife.

Turbidity-
Causes can include soil erosion from fields, urban runoff from precipitation, and stream bank erosion.

Possible solutions & programs;

-High residue crop farming, i.e. -no-till, strip-till, minimum till.
-Conservation practice structures, i.e. –sediment basins, terraces, waterways.
-Grass buffers along streams and watercourses.
-Rain gardens and storm water retention ponds to absorb storm water in cities.
-Stream bank stabilization and diversion structures.
-Pasture management i.e. -stream crossings, rotational grazing, exclusion fencing.
-Feedlot runoff control structures.
-Nutrient management and planning for manure application.
-Septic replacement program.

Your input is valuable to developing a comprehensive implementation plan! Please list any ideas, choices and/or other suggestions that will decrease the bacteria and turbidity in the Rock River. (Please use the back of this form if needed.)

☐ Or, we do not wish to be part of the Implementation Plan process but would like to be on the mailing list for public meetings and notices.

Name: _____
Agency/Group representing: _____
Address: _____
_____

NOBLES SOIL & WATER CONSERVATION DISTRICT

TO: Rock River Stakeholder Organizations

RE: Impairments of the Rock River (Please view newsletter for watershed boundaries.)

The Rock River has been listed on the EPA 303(d) list as an impaired stream because it exceeds the Federal water quality standards for fecal coliform and turbidity. EPA requires an assessment to be developed that addresses the Total Maximum Daily Load (TMDL) of pollutants. Rock, Nobles, Pipestone, and Murray Counties, in partnership with Mankato State University and MPCA, have developed a TMDL assessment. It's on the web at http://www.pca.state.mn.us/water/tmdl/project-rockriver.html. The next step is to write an implementation plan. The implementation plan will spell out activities that can be done to correct these impairments of the Rock River.

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Your organization or government unit has a stake in future land use concerns in the watershed of the Rock River. If you are unable to attend the public meeting or are not interested in providing input for the implementation plan, please let me know. Thank you in advance for your interest and we look forward to seeing and/or meeting you on the 24th.

Enclosed you will find an input form you may bring to the meeting or send in if you are unable to attend. Also enclosed is a newsletter with more information about the project.

Sincerely,

Edward Lenz
Technical Coordinator
Nobles SWCD
(507) 376-9150 ext. 117

NOBLES SOIL AND WATER CONSERVATION DISTRICT
1567 McMillan Street, Suite #3
Worthington, MN 56187
Telephone: (507) 376-9150 Fax: (507) 372-7751
An Equal Opportunity Employer

NOBLES SOIL & WATER CONSERVATION DISTRICT

Suggestions for Improving the Rock River
By addressing fecal coliform bacteria and turbidity

Coliform Bacteria-
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Your input is valuable to developing a comprehensive implementation plan! Please list any ideas, choices and/or other suggestions that will decrease the bacteria and turbidity in the Rock River. (Please use the back of this form if needed.)

If you do not wish to be part of the Implementation Plan process but would like to be on the mailing list for public meetings and notices, please fill out your information and send it to the Nobles SWCD.

Name: _____
Agency/Group representing: _____
Address: _____
_____

NOBLES SOIL AND WATER CONSERVATION DISTRICT
1567 McMillan Street, Suite #3
Worthington, MN 56187
Telephone: (507) 376-9150 Fax: (507) 372-7751
An Equal Opportunity Employer

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Nobles County Public Works Dept.
PO Box 187
Worthington, MN 56187

Kevin Norskog
Kanaranzi-Little Rock Watershed
PO Box 327
Adrian, MN 56110

Paul Shilling
Nobles Planning and Zoning
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Worthington, MN 56187

Diane Thier
Nobles Co. Commissioner
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Adrian, MN 56110

Steve Brake
Nobles Planning and Zoning
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Wilmont, MN 56185

Farmers Union
Tim Henning
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Adrian, MN 56110

Norm Gallagher
Nobles Co. Commissioner
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Worthington, MN 56187

Larry Hyink
Nobles Planning and Zoning
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Worthington, Mn 56187

Michael Hoeft
Nobles Planning and Zoning
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Reading, MN 56165

Larry Jansen
Nobles Board of Adjustment
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Worthington, MN 56187

Jim Knips
13510 Chaney Ave.
Lismore, MN 56155

Brent Feikema
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Lismore, Mn 56155

James Gruye
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Bigelow, MN 56117

Marvin Zylstra
Nobles Co. Commissioner
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Jerry Lonneman
Lincoln-Pipestone Rural Water
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Lakes Association
Genny Turner
1806 South Shore Drive
Worthington, MN 56187

Vern Lestico
Nobles Co. Commissioner
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Steve Hansberger
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Nobles SWCD Board
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Rushmore, MN 56168

Richard Nelsen
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Fulda, MN 56131

Gerald Erstad
Nobles Planning and Zoning
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Worthington, MN 56187

Connie Frahm
Kanaranzi-Little Rock Watershe
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Ellsworth, MN 56129

Craig Nienkirk
Nobles Planning and Zoning
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Worthington, Mn 56187

Nobles County Farmers Bureau
Dean Christopherson
32732 Quine Ave.
Worthington, MN 56187

Jim McGowan
Okabena-Ocheda Watershed Bo
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Worthington, MN 56187

Dave Benson
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Nobles Planning and Zoning
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Worthington, Mn 56187

Robert Kirchner
Nobles Board of Adjustment
38832 200th St.
Brewster, MN 56119

Vern Suedkamp
Nobles SWCD Board
26028 St Hwy 91
Adrian, MN 56110

MURRAY COUNTY
ENVIRONMENTAL SERVICES OFFICE

Murray County Government Center - 2500 28th Street, PO Box 57, Slayton, MN 56172-0057
Phone: (507) 836-6148 ext. 156 - Fax: (507) 836-8904

JON BLOEMENDAAL
jbloemendaal@co.murray.mn.us
Ag & Solid Waste Administrator

CHRIS HANSEN
chansen@co.murray.mn.us
Water Resources Administrator

JEAN CHRISTOFFELS
jchristoffels@co.murray.mn.us
Zoning Administrator

LAURIE HILL
lhill@co.murray.mn.us
Secretary

MEMO

TO: Rock River Stakeholder Organizations

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Sincerely,

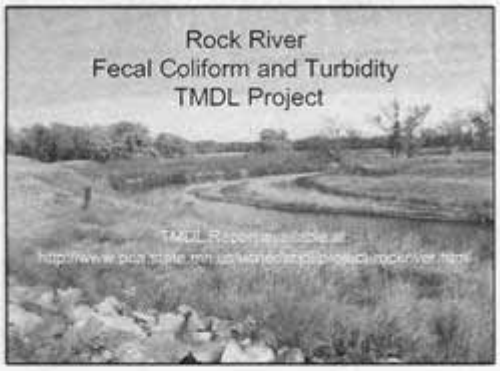
Chris Hansen –Water Resources Administrator

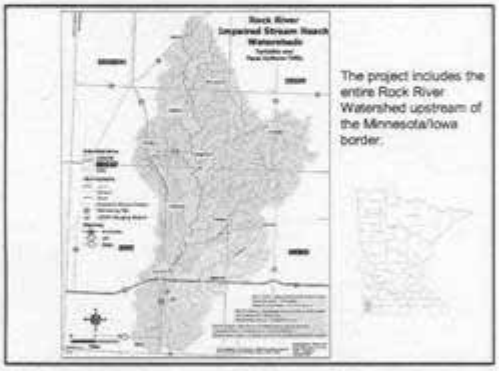
AN EQUAL OPPORTUNITY EMPLOYER

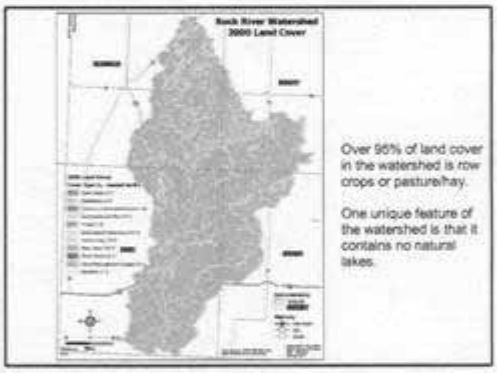
Murray County Mailing

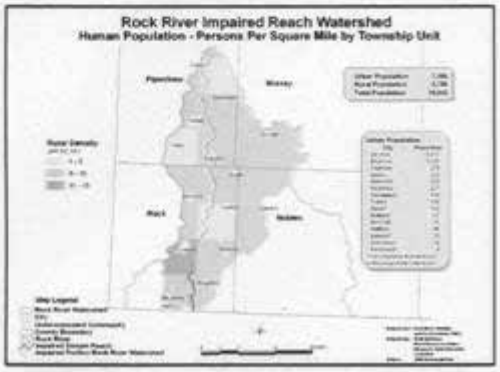
Name	Address	City	State	Zip
Beaver Creek Archers	1945 Engebretson Avenue	Slayton	MN	56172
Pheasants Forever - John Giese	3015 Pine Avenue	Slayton	MN	56172
Pork Producers - Jeff Boerboom	1036 111th Street	Hadley	MN	56151
Cattleman's Association - Dennis Swan	1825 110th Avenue	Balaton	MN	56115
Ducks Unlimited - Wendy Kruger	2611 Broadway Avenue	Slayton	MN	56172
Dairy Association - Dave Schwartz	1323 U.S. Highway 59	Slayton	MN	56172
Driftbreaker's Club - Earl Linder	66 South Shore Drive	Slayton	MN	56172
Cameron Township - Gail Ness	152 131st Street	Woodstock	MN	56186
Chanarambie Township - Connie Post	635 30th Avenue	Chandler	MN	56122
Fenton Township - John Busman	776 1st Street	Chandler	MN	56122
Leeds Township - James York	709 State Highway 30	Lake Wilson	MN	56151
Moulton Township - Karen Bruxvoort	497 41st Street	Chandler	MN	56122
City of Chandler - Alvin Vis	PO Box 37	Chandler	MN	56122
Friends of the Casey Jones Trail - Amy Hoglin				
Murray County Commissioners				

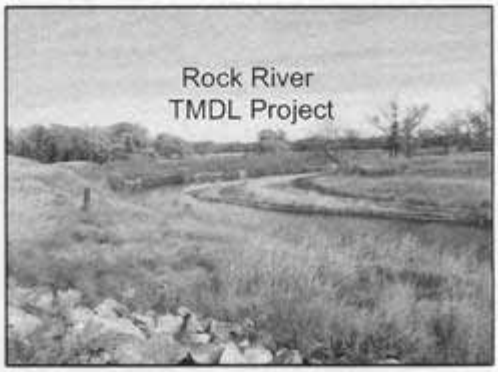
Presentation for 01-24-08 public meeting











Presentation for 01-24-08 public meeting

Water Quality Monitoring

The Minnesota Pollution Control Agency (MPCA) and various local and state groups collect water quality samples from lakes and streams.
Long term monitoring data for the Rock River has been collected at the Minnesota/Iowa border.

Water Quality Standards

Samples are analyzed for many pollutants, such as fecal coliform bacteria, pesticides, turbidity and excessive nutrients.

The MPCA sets a limit for how high each pollutant can be, which is called a ***water quality standard***.

Impaired Streams

When a portion of a stream or river exceeds these standards, the stream is listed as an ***Impaired Water***.

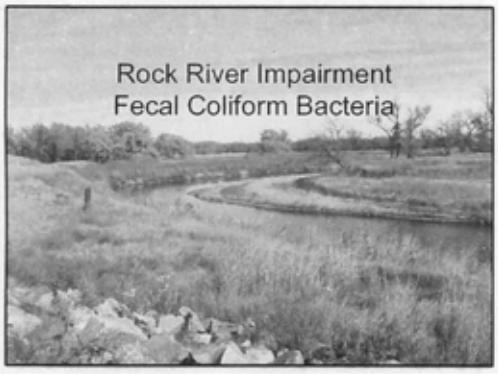
This leads to the requirement of a ***Total Maximum Daily Load (TMDL).*** A TMDL is required for each impaired water.

What is a TMDL?

"Total Maximum Daily Load" is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources." - US EPA

Two Parts to a TMDL:

1.) Water Quality and Source Assessment
2.) TMDL Allocations



What is fecal coliform bacteria?

Fecal coliform bacteria live in the digestive tract of warm-blood animals (humans, pets, farm animals, and wildlife) and are excreted in the feces.

Presentation for 01-24-08 public meeting

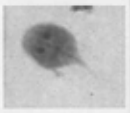
Why is it a concern?

Fecal coliform bacteria themselves are usually not harmful, but they can indicate the presence of waterborne pathogens.

Examples of Waterborne Pathogens

Giardia

A microscopic protozoan parasite that lives in the intestine of people and animals. There are approximately 970 to 1550* cases of giardiasis reported to the MN Department of Health each year.



Cryptosporidium

- Cryptosporidiosis (often called "Crypto") is a diarrheal disease caused by the protozoan parasite *Cryptosporidium* spp. Approximately 90-240* cases of Crypto are diagnosed in Minnesota each year.

* statistics reflect reported foodborne and waterborne sicknesses

Source: MN Department of Health

Water Quality Standard

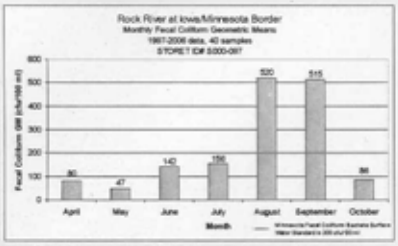
- No month shall have a geometric mean above 200 org/100ml.

  The standard applies to April through October. A minimum of five samples is needed to calculate a geometric mean.

- Not more than 10% of individual values may exceed 2000 org/100 ml.

Where is the Rock River Impaired for Fecal Coliform?

What levels of fecal coliform are found in the Rock River?



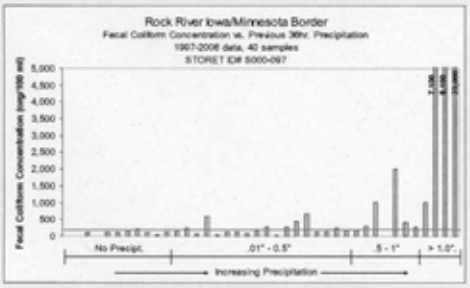
The Rock River qualified to be listed as impaired during July and August.

Factors that Affect Fecal Coliform Bacteria Concentrations

- Temperature – As water temperature increases, the ability of fecal coliform to survive increases. In most rivers, concentrations are highest in July and August.
- Sediment – Bacteria attach to sediment, when the river appears very dirty, bacteria concentrations are usually elevated.
- Precipitation – On average, concentrations are ten times higher during storm runoff.

Presentation for 01-24-08 public meeting

Effect of Precipitation of Fecal Coliform Levels



The highest concentrations of FC occurred during storm runoff.

Sources of fecal coliform bacteria in the Rock River Watershed

Septic Systems and Unsewered Communities

Based on county estimates, approximately 72% of the individual septic systems in Rock River Watershed are non-compliant systems. This equates to an estimated 1,080 systems that discharge partially or untreated sewage to streams.

Surface discharge from non-compliant septic system that would be considered an ITPHS.

The communities of Trosky, Ash Creek and Kanaranzi are unsewered. Some homes and businesses in these communities also may have inadequate wastewater treatment.

Typical Septic System

Wastewater Treatment Plants

Municipal wastewater treatment plants are required to monitor their effluent and meet a discharge limit of 200 organisms/100 ml fecal coliform concentration.

Wastewater Treatment Plant Violations and Bypasses

(2002-2006)

Violations

Hatfield – 29 (treatment system now in place)
Edgerton – 2 in 2006
Holland – 2 in 2004, 1 in 2005

Bypasses

Woodstock, March 31, 2006 was the only reported bypass. This was following 3.5" of precipitation.

Stormwater Runoff

Fecal coliform bacteria and other pollutant concentrations in urban runoff can be as great or greater than those found in cropland, grazed pasture, and feedlot runoff (USEPA, 2001).

Presentation for 01-24-08 public meeting

Open Feedlots

The majority of the 684 livestock facilities are confined operations with little runoff to surface water. Still, there is a significant number of open feedlots, some of which have pollution problems and pose a risk of fecal contamination.

Open Feedlots with pollution problems

Land Application of Manure

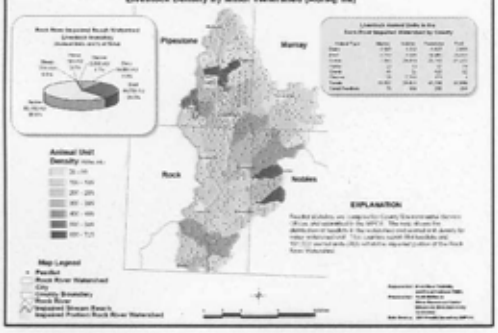
Land application of manure can be a major source of fecal contamination. The significance of this source depends on how the manure application is managed, the rate and time of application, observance of setbacks from surface water, timely incorporation to avoid major runoff following a rain, residue management, and other practices.

Injected Manure

Surface Applied Manure

Rock River Impaired Reach Watershed

Livestock Density by Minor Watershed (AU/sq. mi)



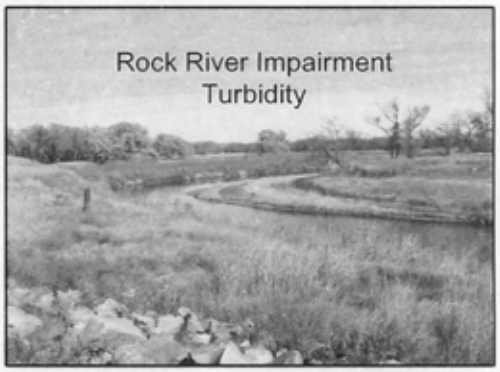
Cattle with Access to Streams

Cattle that have access to streams are another potential source of fecal coliform bacteria.

Wildlife & Pets

Wildlife and pets can also contribute to bacterial contamination (e.g. Canada geese, deer, wild turkeys, pheasants, as well as dogs and cats).

Rock River Impairment
Turbidity



Presentation for 01-24-08 public meeting

Turbidity

Turbidity is closely associated with two other stream measurements, total suspended solids (TSS) and transparency. These measurements can be used with turbidity data is not available.

TSS is a measurement of the amount of sediment and organic matter present in a water sample.

Transparency is a visual assessment of how far down into the water you can see using a "transparency tube".

Why is it a concern?

High turbidity/TSS and low transparency levels limit light penetration and inhibit healthy plant growth on the stream bottom. It also makes it difficult for aquatic organisms to find food, can affect gill functions and elevated amounts of sediment can cause spawning habitat to become covered.

Surface Water Standards

Turbidity – Not more than 10% of samples shall exceed 25 NTU's.

TSS – Not more than 10% of samples shall exceed 66 mg/L.

Transparency – Not more than 10% of samples shall be under 20 cm.

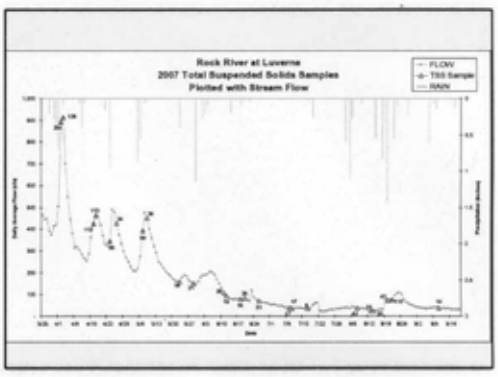
Where is the Rock River Impaired for Turbidity?

What levels of turbidity are found in the Rock River?

Rock River, near Luverne
90% of samples exceeded standards.

Elk Creek, near Luverne
96% of samples exceeded standards.

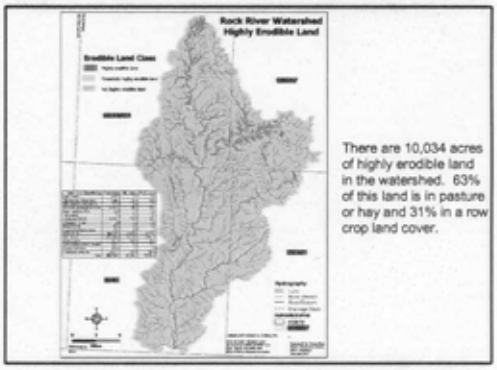
Rock River, at MN/Iowa Border
40% of samples exceeded standards.



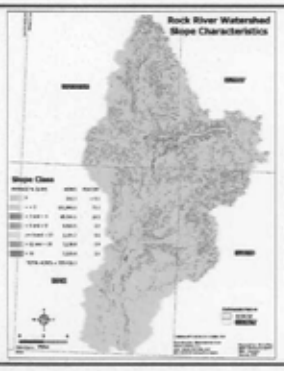
Presentation for 01-24-08 public meeting

Sources of turbidity in the Rock River Watershed

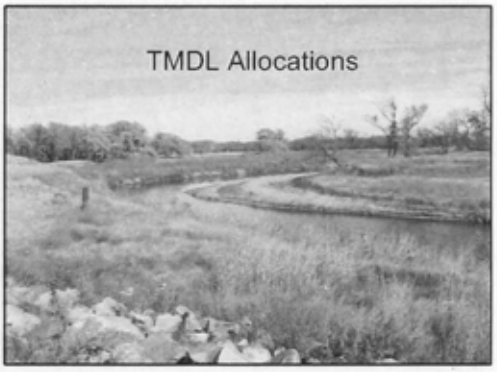
- Suspended silt from soil erosion after storms.
- Stream channel erosion.
- Suspended organic matter, such as bacteria, plankton, plant material, etc.



There are 10,034 acres of highly erodible land in the watershed. 63% of this land is in pasture or hay and 31% in a row crop land cover.



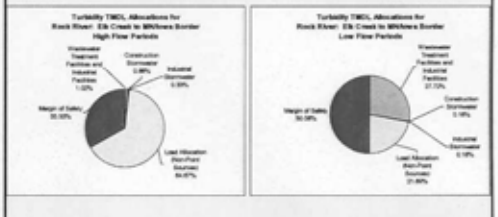
Slope percentage is often a indicator of where significant soil erosion is occurring in a watershed. Depending on land cover, slopes above 12% often deliver the highest sediment loads to streams.



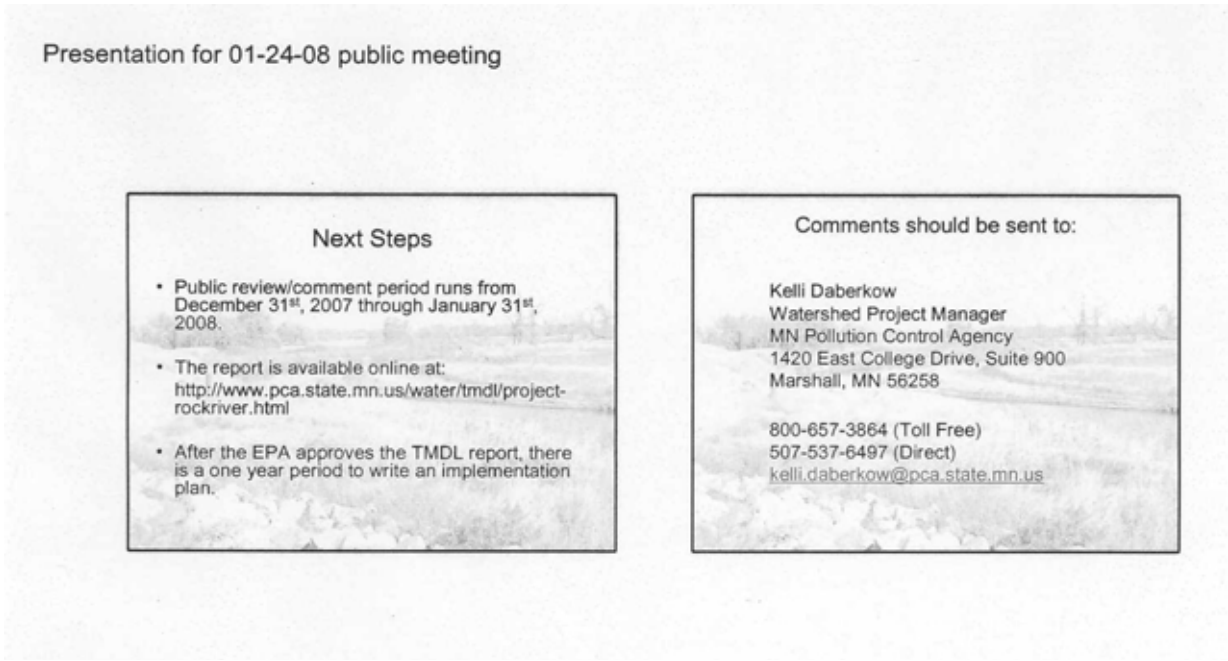
Example of a TMDL Allocation

High flow vs. Low flow
Fecal Coliform TMDL Allocations
for Rock River at MN/Iowa Border

High flow vs. Low flow
Turbidity TMDL Allocations
for Rock River at MN/Iowa Border



Presentation for 01-24-08 public meeting



Rock River TMDL Public Meeting Minutes
Thursday, January 24, 2008

Edgerton

- Open house at 2:30 pm, Meeting started at 3:00 pm. Meeting lasted 1 hour, 10 min.
- 57 people present and 10 committee members
- Meeting:
  - Kelli Daberkow, MPCA Project Manager, gave an overview of the TMDL process, history of the project, and discussed the public comment period options for expressing comments.
  - Scott Matteson, Minnesota State University-Mankato Water Resources Center (MSU-M WRC) gave a Powerpoint presentation on the Rock River TMDL Assessment.
  - Doug Bos, Rock County Land Management Office (RCLMO) talked about the Implementation Plan and Advisory Committee role.
  - Arlyn Gehrke, (RCLMO) updated the group about ongoing monitoring in the watershed.
  - Kyle Krier, Pipestone County; Wayne Smith, Nobles County; and Chris Hansen, Murray County talked about current programs offered and county updates.
- Questions and comments that were received:
  - You talked about getting funding; funding for what?
  - What time period does this sampling cover? Did you look at trends and changes since the 1960s, 1970s, etc?
  - You only sampled by Luverne?
  - Where is the bacteria coming from that is getting in the storm sewers?
  - Is the Rock impaired/polluted with other things besides fecal & turbidity?
  - Comment-we need to encourage livestock producers to be apart of this process.
  - Samples were only collected in 1 year?
  - Comment: There are not many pesticides in the aquifers around here.
  - Is there monitoring at landfills and old dumps? What does that show?
  - Comment: I live on Poplar Creek and DNR sampled there two years ago and they said the water was good quality.
  - How do we know that the Rock River itself is not causing the turbidity through bank slumping?
  - In Pipestone County, many producers are already doing nutrient management, what more is there to do?
  - About 10 years ago, there was a push to have septics all updated, that was unrealistic, there needs to be adequate time to have these things done.

Meeting concluded at 4:10 pm.

Luverne

- Open house at 6:30 pm, presentation started at 7:00 pm. Meeting lasted 1 hour, 40 min.
- 60 people present and 10 committee members.
- Meeting:
  - Kelli Daberkow, MPCA Project Manager, gave an overview of the TMDL process, history of the project, and discussed the public comment period options for expressing comments.

- Scott Matteson, Minnesota MSU-M WRC gave a Powerpoint presentation on the Rock River TMDL Assessment.
- Doug Bos, RCLMO talked about the Implementation Plan and Advisory Committee's role.
- Arlyn Gehrke, (RCLMO) updated the group about ongoing monitoring in the watershed.
- Doug Bos, RCLMO mentioned that Rock County received grant money to complete a stream bank stabilization on the Rock River.
- Ed Lenz, Nobles County, talked about the programs offered and water plan updates.

- Questions and comments that were received:
  - How many miles in the impaired reach?
  - Does fecal coliform reproduce?
  - How many samples have been collected?
  - Do you have the individual fecal coliform values for August?
  - Can 1 septic system cause a problem or does it take 10,000?
  - Where is fecal coliform bacteria coming from in stormwater?
  - If fecal coliform increases in hot temperatures, what does it do in cold weather?
  - In that research, how do you know fecal coliform is coming from manure?
  - Have you studied fecal coliform levels when manure is applied?
  - Is bacteria anaerobic or aerobic?
  - Comment: E. coli grows in normal conditions.
  - Has MPCA measured the fecal coliform levels in areas with increased wildlife?
  - Have the long-term fecal coliform trends been looked at in northern MN?
  - Is there any efforts to validate the volunteer transparency tube samples that caused the impairments?
  - How many total volunteer transparency tube readings were taken?
  - How do you determine that areas with more slope caused erosion?
  - What factor was used for natural background?
  - What is Iowa doing for TMDLs?
  - What are the standards for IA water quality?
  - What is the standard for SD?
  - How do you know that some of this turbidity is not naturally occurring?
  - You noted that there are no lakes in the watershed, would lakes make it better or worse?
  - Can you explain that higher fecal coliform from sediment getting stirred up?
  - Is there currently volunteer sampling taking place?
  - Do you think the fecal coliform samples that are in the thousands are lab errors?
  - Why can't you dump cement in the river?
  - On the slide with feedlots and fecal coliform, in NW MN there are not very many feedlots, but there is a fecal impairment, what is that from?
  - Rock County has updated the septics and feedlots, what is left?
  - Comment: concerns about assumptions in the report, non-rangeland CRP causes more turbidity.

Meeting concluded at 8:40 pm.

Edgerton, MN **Rock River TMDL Public meeting** 57 present +10 committee **January 24, 2008** 50 signed in

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
1	Al Vis	City of Chandler	Newsletter
2	Jeff Lummit	City of Chandler	"
3	Ray Brien	1750 St Hwy 30 Woodstock	
4	Marvin Tinklenberg	P.O. Box 5 Edgerton, MN	[illegible]
5	Robert Schelhaas	Farmer	"
6	Jim Anderson	City of woodstock	News Letter
7	Ron Beckering	City of Hatfield	News letter
8	Andrew Bonnema	—	Newsletter
9	Anna Mae Fritz	Pipestone Co. Soil-Water Sup.	[illegible]
10	Henry Dyk	Edgerton city	Paper
11	Irene Huisinick	Edgerton Enterprise	Paper
12	Chris Veldhuizen		
13	Randy Landhuis	Leota Sanitary Dist.	Newsletter
14	Allen Vis	former County Commissioner	Newspaper
15	Jerry Blankers		

Edgerton, MN ***Rock River TMDL Public meeting*** ***January 24, 2008***

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
16	Lou Anker		post card
17	Mike [illegible]		
18	Randy Sprunk		
19	Ron Brands		
20	Ron Nykanp		
21	Dennis Smith	City of Edgerton	
22	Roger Tolsma	Chandler	
23	John H Zwier	Chandler	
24	Leon Kradt	Edgerton	
25	Lewis Kuntz	Edgerton	
26	Steve Howey	MPCA	
27	Dawn Schuld		Post card
28	Dan Schuld		
29			
30			

Edgerton, MN **Rock River TMDL Public meeting** **January 24, 2008**

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
31	[illegible]	[illegible]	Letter
32	[illegible]		
33	Al Brummel	none	letter
34	Bernard Baker	none	letter
35	Terry Pronk		
36	Ron Pronk	Lista Water	
37	Katherine Pekarek-Scott	MPCA	
38	Kim Beuckens	P&T River Project	MPCA
39	John Busman	Fenton Township / Murray County	Mailout
40	Lloyd K. Wassink	Osborne Township clerk	mail
41	Jack Brakey	LAND OWNER —	MAIL —
42	Alan Vander Tup	Land owner	NEWSLETTER
43	Bill Post	Land owner	Letter
44	Jim Bloomendaal [illegible]	Murray C.	
45	Chris Hansen	Murray County	

Edgerton, MN **Rock River TMDL Public meeting** **January 24, 2008**

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
46	John Bleyenberg		
47	Rodney Bleyenberg		
48	Floyd Prins		
49	Rod Sprik		
50	Al Langseth	Nobles County	
51	Mike VanderPol		
52	Stephanie	Pipestone Co	
53	Forrest Peterson		
54			
55			
56	COMMITTEE		
57	Lexyne Smith, Doug	Pos Justin Decker, Arlyn Gehrke, Chris Hinsen, Kelli Dabelstein	
58	Scott Mathison, Mark Vaninman, Ed Lenzi		
59			
60			

Luverne, MN **Rock River TMDL Public meeting** 60 present **January 24, 2008**

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
1	Elmer Stoltenberg	farmer	
2	Norman Pahl	Farmer	
3	Roger Jackson	RIM Ground	
4	Louie Loget	Clinton Twp	
5	Eric Binford	Farmer	
6	Bryce Stoltenberg		
7	Don Reker	SWCD	
8	John Cell	City of Luverne	
9	Mike Feikema		
10	Chuck Feikema		
11	[illegible]	Kanaranzi Township	Letter
12	Dave Ahles		
13	Jim Willer	Beaver Creek	
14	Eugene Sandager	Farmer	Paper
15	George W. Shurr	Family Landowner	Newspaper

Luverne, MN **Rock River TMDL Public meeting** **January 24, 2008**

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
16	Pete Bakken	Rock Co. Farm Bureau	internet e-mail
17	Steve Top	Rock Corn Soybean	
18	Ken Haima	Rock Co. Comm.	
19	Chuck Van Wyhe	Rock Co Pheasants Forever	
20	David Breyfogle	self.	mailing.
21	Matt Hirsbrunner	Producer	tmdl effort
22	Al Lais	City of Luverne	newsletter
23	Derick Feikema	Rock Co. Pork Producers	newsletter
24	Sharon Feikema		newsletter
25	[illegible]	Rock Co.	
26	[illegible]	Farmer	paper
27	David DeBoer	Producer	newsletter
28	Carl Ehde	Star Herald	paper
29	Harold Stutt		Paper
30	Roy Moeller	Farmer	

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
31	Mary Tilstra	Land owner	Post card
32	Harold Tilstra	Land owner	
33	Richard Bakker	"	
34	[illegible]	Rock [illegible]	
35	Norlan Vic Stang	Land OWNER	
36	Shaun Feiten	Land Owner	
37	Julie Buntjer	Daily Globe	
38	Jeffrey R Ahrendt	Land owner	
39	[illegible]	Land owner	
40	[illegible]	Consultant	
41	[illegible]	NRCS	
42	Steven Commerford	MSGA	Internet
43	Steve Sodeman	MCGA	
44	Jay Bakken	Producer - LNCA	
45	Lyle Rollag	Producer - MCGA	

Over →

NAME	GROUP	HOW DID YOU HEAR ABOUT THIS MEETING
Marilyn Bloemendaal	Landowner	Advertising
Daryl Hansburg	Landowner	Advertising

Luverne, MN ***Rock River TMDL Public meeting*** ***January 24, 2008***

	Name	Agency/Group Representing	How did you hear about the meeting? i.e. radio, newsletter, newspaper, neighbor, etc.
46	Merlin Wyaia	Landowner/producer	Newspaper
47	TOM JENNINGS	St. Catherine Church	news "
48	ESTHER FRAKES	Luverne City Council	mtg/mailing/news
49	Stacey Gravenhof	Rock Nobles Cattlemen	Cattlemen
50	Grant Binford	Rock Nobles cattlemen	Cattlemen
51	Steve Honey	MPCA	County staff
52	Case Veikema		WASTO 1st one-Paper
53	Harold Vander Stoep		
54	[illegible]		Newsletter
55	[illegible]		mailing
56	Kevin Barnhart	Rock County Pork Producers	Newsletter
57	Curt Bloemendal		"
58	[illegible]		Newsletter
59	[illegible]		Pork board meeting
60	[illegible]		

How Do We Address the Issues of the Rock River?

In other words, how should the TMDL implementation plan be written to fix these impairments?

Turbidity- Measurement of water clarity. Caused by soil particles, organic materials, and algae. *50% of Rock County's water samples (1997-2006) exceeded the standard of 25 NTU.

Causes:

- Soil erosion from fields, construction sites, etc.
- Eroding stream banks and gullies.
- Decaying plants and animals.
- Urban runoff.
- Wastewater and septic system discharge

Possible Fixes:

- High residue crop farming, i.e. –no-till, ridge till, minimum till.
- Conservation practice structures, i.e. –sediment basins, terraces, waterways.
- Grass buffers along streams and watercourses.
- Rain Gardens and storm water retention ponds to absorb storm water in cities.
- Stream bank stabilization and diversion structures.

Fecal Coliform Bacteria- bacteria that passes through the fecal excrement of humans, livestock and wildlife. *Concentrations of fecal coliform were 2.5 times the acceptable limits during August and September each year.

Causes:

- Wildlife in streams.
- Non compliant septic systems.
- Uncontrolled feedlot runoff.
- Manure application during rainy periods
- Livestock watering in streams.
- Animal waste from parking lots and streets delivered via a storm water system.

Possible Fixes:

- Feedlot runoff control structures.
- Nutrient management and proper manure application.
- Pasture Management, i.e. –Steam crossings, rotational grazing, exclusion fencing.
- Repair septic systems.

What do we do now that impairments have been verified and loads allocated?

- Write a plan to address the impairments, Turbidity and Fecal Coliform, by using various fixes and BMPs.
- Utilize Two Committees
  - -Technical Committee-*existing*
  - -Advisory Committee-*looking for volunteers*
- Meet with both committees for input, use technical committee to draft an implementation plan, bring both committees back together to review and revise.

Request for Input on Implementation Plan—Advisory Committee

We need public input for writing the implementation plan. The implementation plan will be developed between February and August 2008. There will be 3-4 meetings during this timeframe to develop the plan. Your input is needed! Talk to Doug if you are interested or if you would prefer, fill out the Suggestion form and return to the Rock County SWCD/LMO by January 31?

Suggestions for Improving the Rock River

By addressing fecal coliform bacteria and turbidity

Coliform Bacteria-
Causes can include feedlot runoff, non-compliant septic systems, improper land application of manure, cattle in streams and wildlife.

Turbidity-
Causes can include soil erosion from fields, urban runoff from precipitation, and stream bank erosion.

Possible solutions & programs;

-High residue crop farming, i.e. -no-till, strip-till, minimum till.
-Conservation practice structures, i.e. –sediment basins, terraces, waterways.
-Grass buffers along streams and watercourses.
-Rain gardens and storm water retention ponds to absorb storm water in cities.
-Stream bank stabilization and diversion structures.
-Pasture management i.e. -stream crossings, rotational grazing, exclusion fencing.
-Feedlot runoff control structures.
-Nutrient management and planning for manure application.
-Septic replacement program.

Your input is valuable to developing a comprehensive implementation plan! Please list any ideas, choices and/or other suggestions that will decrease the bacteria and turbidity in the Rock River. (Please use the back of this form if needed.)

☐ Or, we do not wish to be part of the Implementation Plan process but would like to be on the mailing list for public meetings and notices.

Name: _____
Agency/Group representing: _____
Address: _____
_____

Please return to Rock County Land Management Office, 311 West Gabrielson Road, Ste 5 Luverne, MN 56156
Contact: Dawn Rae 507 283 8862

PRINT CLOSE

Rock County Online Edition
STAR HERALD

Thursday, January 31, 2008

Residents, officials meet to clean up Rock River pollution

Lori Ehde
Editor

Thursday, January 31, 2008

The Rock River is polluted, and some local livestock producers are afraid fingers are pointing at them.

That was the tone of a public meeting Thursday, Jan. 24, that drew nearly 70 people to the Rock County Human Services building to discuss the state's "impaired" label on the Rock River.

The point of Thursday's meeting was to provide information to the public and to seek public participation in order to garner state and federal dollars for river cleanup.

But many at the meeting seemed worried the end result will mean more government restrictions on their livestock operations, and some discussion questioned the validity of the river's "impaired" status.

"There's no one here who isn't interested in maintaining water quality," said livestock producer David Thier, Rushmore.

"But people aren't extremely interested in going out and making changes to their operations based on hunches."

State and county officials emphasized this needn't be the focus.

The point, they said, is that the river is polluted and Thursday's meeting is just one of the steps involved in accessing public funds to fix the problem.

Doug Bos, assistant director of Rock County's Land Management Office, tried to reassure livestock producers.

"This is meant to be a tool, not a hammer used to force people to change farm operations or practices," Bos said. "It's a tool to bring changes to the Rock River watershed."

By going through the state's process of addressing the problem, he said everyone stands to benefit.

"We could stick our heads in the sand and say we don't have a problem and we don't want to deal with it," Bos said.

He said other communities with impaired waters who took that approach ran into economic development roadblocks later on, because their wastewater load was maxed out.

Bos said an impaired water label on the community could affect things like an ethanol plant expansion or housing growth.

He said the good news is that there is money available to clean up the river, whatever those solutions might be.

"By going through this process, we have access to cost share programs, and that's why we're here and that's why I'm excited to see all of you here."

TMDL process

Every two years, the state of Minnesota publishes a list of "impaired" waters that do not meet water quality standards.

Once a river or lake is put on the impaired list, a Total Maximum Daily Load study is required.

The Rock River in 1994 was listed as impaired for fecal coliform (feces), based on data collected at monitoring site at the Minnesota-Iowa border. In 2002 it was found to be impaired for turbidity (cloudiness).

The Water Resources Center at Minnesota State University, Mankato, is working with local, state and federal agencies to identify sources of pollution and possible solutions.

MSU specialists are working under a grant from the U.S. Environmental Protection Agency to conduct the TMDL on the Rock River Watershed.

The actual portions of the river labeled "impaired" start north of Luverne through the Iowa border. Elk Creek, a major contributory to the river, is also impaired from Lismore to the Rock River south of Luverne.

The Rock River watershed includes 355,000 acres in portions of Pipestone, Murray, Rock and Nobles counties. It starts as far north as Holland and continues south into Iowa. It spreads roughly from Highway 75 east to Highway 91, the north-south road between Chandler and Adrian.

The entire watershed is being searched for possible pollution sources.

Once sources are determined, a plan will be developed to correct problems and implement measures to meet water quality standards.

It's these measures that have some people worried.

"I'm all for clean water and conservation, but I have huge concerns about the models that the state has used to determine what is 'impaired' and what isn't," said Eugene Sandager, Hills.

"Minnesota has always far exceeded federal standards, and I have even more concerns about what the solution might be. I want to make sure that what we're doing will actually be a solution."

Become part of process and reap rewards of grant money for solution

Bos said this is why it's important for local residents to become part of the TMDL process.

"It won't be an easy process," he said, "but it's about how to fix the problem with input from all those affected."

The technical committee already working on the project will work with an advisory committee of volunteers to draft an implementation plan to clean the river.

The implementation plan will be drafted between February and August, and additional public input will be sought at three to four meetings scheduled in that time.

Those interested in serving on the advisory committee or those interested in providing written comment on the process should contact the Rock County Land Management Office, 283-8862.

The first advisory committee meeting will be scheduled within a couple weeks.

Ultimately the goal of the project is to secure funding to implement practices to reduce fecal coliform and turbidity numbers.

Affected residents will have access to cost share funds and low interest loans to help restore water quality in the Rock River.

The Rock River TMDL report can be viewed at www.pca.state.mn.us/water/tmdl.

Related Links

THE Edgerton ENTERPRISE
EDGERTON, MINNESOTA VOLUME 126, NUMBER 50 JANUARY 30, 2008 SINGLE

Community members attended a public meeting last Thursday where information was presented on pollution problems in the Rock River. The meeting was held at the Edgerton Ambulance building.

What can be done to clean the Rock River?

By Jill Fennema

Last week Thursday, more than 60 concerned citizens attended a public meeting hosted by Rock River Technical Committee. The open house, which was held at the Edgerton Ambulance building, was a forum for giving the public information regarding the water quality of the Rock River.

In 1994, the Minnesota Pollution Control Agency (MPCA) determined that portions of the Rock River were impaired because the water contained too much fecal coliform bacteria. In 2002, turbidity was also added as one of the impairments.

What does that mean to you and I?

It means that the Rock River in southwestern Minnesota fails to meet the standard for human contact. Recreational contact, especially swimming, is not recommended when high concentrations of fecal coliform bacteria are present.

Edgerton's city water supply is sometimes affected by fecal coliforms. Last summer, the city water had to be treated because of high levels of the bacteria. You may have noticed your water tasted like bleach after it was treated.

Fecal coliform is a bacteria found in the feces of all warm-blooded mammals. The bacteria itself is usually not harmful, but high concentrations can indicate the presence of other harmful bacteria, viruses, and parasites.

Turbidity is a measure of water clarity. A decrease in water clarity is caused by suspended and dissolved matter such as clay, silt, organic matter, and algae. Increased turbidity levels limit light penetration and inhibit healthy plant growth. According to the MPCA's website, high turbidity can make it difficult for aquatic organisms to find food, affect gill functions and cause spawning habitat to become covered.

The Rock River begins about 13 miles northeast of Pipestone and flows southward through Rock County and into Iowa. The impaired portion of the river is 6-7 miles from where it meets the Elk Creek south to the Minnesota/Iowa border. Elk Creek flows south from Luverne and joins the Rock River south of Luverne.

Continued on Page 5

Rock River watershed, continued

Continued from front

According to Kelli Daberkow, who works for the MPCA out of Marshall, sampling was conducted at a site on the border.

The TMDL report shows the Rock River watershed as being impaired because the sampling point on the border encompasses all of the area above that point. Edgerton, along with Hatfield, Trosky, Woodstock, Chandler, Leota, Lismore, Magnolia, and Luverne are all located within that watershed.

According to Scott Matteson, who is with the Minnesota State University-Mankato (MSUM) Water Resources Center and a consultant for the Rock River TMDL study, the effected area includes about 355,000 acres of the Rock River watershed located in portions of Murray, Nobles, Pipestone and Rock counties. There are about 11,000 people living in that area.

The Minnesota State University-Mankato (MSUM) Water Resources Center has prepared a Total Maximum Daily Load (TMDL) report documenting the impairments to the Rock River. A TMDL study calculates the maximum amount of a pollutant a water body can receive (known as the "loading capacity") without violating water quality standards. The TMDL identifies all the sources of pollutants causing impairments and lists the reductions necessary to meet the water quality standard.

According to the draft TMDL, the pollution of the Rock River is caused by a combination of human and animal sources.

Fecal coliform pollution can be caused by cattle that are allowed access to streams, improper application of manure to agricultural land, runoff from feedlots, illegally discharging septic systems, city storm water, and wildlife.

In general, the primary sources of pollution during wet conditions are related to livestock manure. During dry conditions, illegally discharging septic systems and wildlife are the primary pollutants, according to the TMDL report.

The Rock River Watershed Project estimates that there are about 1,100 non-compliant septic systems.

Sources of increased turbidity levels include erosion from fields or construction sites, urban runoff from precipitation, eroding streambanks, bottom feeders such as carp and excessive algal growth.

What can be done to repair the Rock River?

The Rock River Technical Committee is composed of individuals from the MSUM Water Resources Center, Rock, Nobles, Pipestone and Murray counties, the MPCA, the U.S. Fish and Wildlife Service and the Department of Natural Resources (DNR). They are working to identify the sources of pollution and find possible solutions.

Citizen participation is an important part of the TMDL process. The MPCA is seeking public input to help develop the implementation plan. Their ultimate goal is to gain federal funding to help clean up the river. Volunteers are needed to serve on an advisory committee. This committee will be instrumental in developing an implementation plan. The plan will provide a strategy for implementing practical management measures so that the Rock River can meet water quality standards.

The Rock County Land Management Office is leading the implementation plan effort, which will be developed between February and August 2008. There will be 3-4 regular meetings during that time to develop the plan.

Right now, the MPCA is seeking written comments on the draft TMDL report. You can view the draft a www.pca.state.mn.us/water/tmdl/project-rockriver.html

If you would like to comment or request more information, you must contact Kelli Daberkow at 1-800-657-3864 or email her at kelli.daberkow@pca.state.mn.us. Written comments on the draft TMDL Report must be sent to her by January 31 by 4:30 p.m. If you do not have access to email, comments can be faxed to her attention at 507-537-6001.

The MPCA will prepare responses to the public comments, make revisions to the draft TMDL Report, and submit it to the U.S. Environmental Protection Agency for approval.

For more information on the Rock River fecal coliform bacteria and turbidity TMDL project, contact: Kelli Daberkow, MPCA-Marshall, 507-537-6497

Scott Mattison, MSU-Mankato WRC 507-389-5338

Rock County Land Management Office, 507-283-8862 ext. 3.

Idyl Exhibit launches CD with concert in Luverne
See Page A8

WEEKEND
January 26 & 27, 2008
Worthington, Minnesota

Daily Globe

Work begins to improve Rock River watershed

Comments on TMDL accepted through Thursday

BY JULIE BUNTJER
DAILY GLOBE

LUVERNE — The results of a Total Maximum Daily Load (TMDL) assessment — identifying high levels of fecal coliform bacteria and poor water clarity in the Rock River — were presented to a standing-room-only crowd of nearly 70 people in Luverne Thursday night.

Hosted by the Minnesota Pollution Control Agency (MPCA) and Mankato-based Water Resources Center (WRC), the event offered landowners within the Rock River watershed an opportunity to view data collected from the river during the past 10 years and ask questions not only about the testing, but about how to improve the river's water quality. A similar meeting was conducted Thursday afternoon in Edgerton, with nearly 60 people in attendance.

Kelli Daberkow, watershed project manager with MPCA's Marshall office, said the TMDL assessment is meant to be a tool for addressing water quality problems and is the first step in bringing financial resources to the watershed.

The watershed consists of 355,000 acres and spans portions of Rock, Nobles, Pipestone and Murray counties. Three segments of the river are deemed impaired because of turbidity (water clarity), while a fourth segment — stretching from the Minnesota-Iowa line north for about seven miles — showed high levels of fecal coliform bacteria, according to Scott Matteson, WRC project coordinator.

Sources of the bacteria include wildlife, livestock, birds and humans. The highest levels of the bacteria were recorded in tests conducted in August and September, said Matteson.

"As temperatures go up, the numbers for fecal coliform bacteria go up," he said. Sediment levels and precipitation also have an impact on fecal coliform levels. Matteson said testing conducted on the

See RIVER, Page A8

RIVER: Volunteers sought

From Page A1

river within 36 hours of a 1-inch or greater rainfall caused spikes in the level of fecal coliform bacteria.

Coliform culprits

Matteson said more than 1,000 non-compliant septic systems are located within the watershed, and three communities — Trosky, Ash Creek and Kanaranzi — do not have sewer systems.

"Some homes and businesses in those communities may also have inadequate wastewater treatment systems," said Matteson, adding that the inadequate systems may be contributing to the high levels of fecal coliform bacteria in the Rock River.

Water treatment plants can also impact bacteria levels, and Matteson said plants in Hatfield, Edgerton and Holland have all had violations in recent years.

While storm water runoff can be a contributing factor, Matteson said that is likely a small factor because only 1 percent of the watershed is located within an urban setting. The two largest communities in the watershed are Luverne and Edgerton.

Drawing the most concern from those attending the meeting Thursday was the suggestion that feedlots and land applications of manure contribute to the high levels of fecal coliform bacteria.

Matteson said 694 feedlots are located within the Rock River Watershed, comprised of 59 percent swine, 30 percent beef and 9 percent dairy farms.

When one attendee asked Matteson if they could determine the fecal coliform bacteria was due to livestock or something else such as wildlife, he could not answer with certainty.

"I can't give you DNA fingerprinting — there's nothing like that out there," said Matteson. "(However), when we look across the state of Minnesota, we really don't have rivers in northern Minnesota (where wildlife is abundant) that are high in these fecal coliform bacteria."

The next step

Individuals have until Thursday to send written comments regarding the fecal coliform and turbidity TMDL assessment on the Rock River to the MPCA. After all of the responses have been collected, a report will be submitted to the Environmental Protection Agency for approval.

Meanwhile, Doug Bos with the Rock County Land Management Office, said volunteers are sought to serve on an advisory committee that will meet in the coming months to create an implementation plan for the watershed. Those wanting to serve on the committee should contact Bos at (507) 283-8862 by Thursday.

Bos has lists of possible fixes for both the poor water clarity and high levels of fecal coliform bacteria.

To correct the turbidity, Bos said farmers can practice high residue crop farming such as no-till, ridge-till or minimum-till; implement conservation practice structures including waterways, terraces and sediment basins; plant grass buffers along streams; and create stream bank stabilization and diversion structures. In communities, one avenue is to pursue rain gardens and storm water retention ponds.

Possible solutions Bos outlined for reducing the amount of fecal coliform bacteria in the river are encouraging feedlot runoff control structures, implementing nutrient management and proper manure application plans and practicing pasture management such as rotational grazing, creating stream crossings and constructing fencing. Repairing septic systems would also have a positive impact.

By implementing a variety of new programs and practices, the goal is to return bacteria levels in the Rock River to a level for safe recreational contact. Daberkow said Iowa is taking the same steps toward completing a TMDL on the Rock River in its state.

Once the TMDL implementation plan is complete, the hope is that Clean Water Legacy dollars can help fund new programming. Rock County Administrator Kyle Oldre assured those at the meeting that the staff and the technical expertise are in place to address the TMDL.

Gene "Pecky" Sandager of Hills was one of the farmers in the audience not sold on the TMDL study.

"I have huge concerns about the models the state has used in determining what is impaired and what is not impaired," Sandager said. "As we look at bringing money into our county, I want to make darn sure we're going to fix it.

"Take it a little slow, make sure we're doing the right thing before we go off on a rampage," he added.

Minnesota Pollution Control Agency

MPCA Feedlot Program Update

Jan. 31, 2008

Please forward this to anyone who might be interested in this information. If you know of anyone who would like to be on this distribution list, please send us their e-mail address. If you have any questions, or would like to suggest a newsletter topic, please contact Forrest Peterson, MPCA Willmar office, 320-214-3789, forrest.peterson@pca.state.mn.us. Thanks.

To sign up for a free subscription to the MPCA's **Minnesota Environment** magazine, e-mail your name and postal mailing address to: becky.helgesen@state.mn.us or call 651-282-6244.

ARTICLES IN THIS ISSUE

ROCK RIVER TMDL MEETINGS WELL-ATTENDED; VOLUNTEERS NEEDED

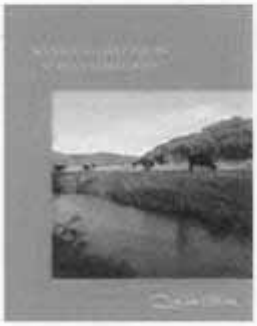
Kelli Daberkow of the MPCA presents an overview of the Rock River bacteria pollution study to livestock producers and others meeting at Edgerton Jan. 24.

Interest in the Rock River fecal coliform and turbidity TMDL (Total Maximum Daily Load) project drew a total of more than 100 people to meetings at Edgerton and Luverne on Jan. 24. The Minnesota Pollution Control Agency has placed two sections of the Rock River and one section of Elk Creek on the state's impaired waters list for exceeding water quality standards. Monitoring data show that these reaches fail to meet the standard for human contact due to excessive amounts of fecal coliform bacteria, and also the water quality standard for turbidity. Possible sources of bacteria include inadequate septic systems, unsewered residential areas, manure-contaminated runoff, and wildlife. Counties and agencies working on the project are seeking volunteers to participate in developing a plan to address the pollution sources. Interested persons may

contact Kelli Daberkow, MPCA-Marshall, 507-537-6497; or Rock County Land Management Office, 507-283-8862 ext. 3. For more information on impaired waters and TMDL projects on the Web, visit: http://www.pca.state.mn.us/ and click on "Impaired waters and TMDLs".

'BMPs for Pathogen Control in MMPs' – print copies available.

A print version is now available of the UM Extension Bulletin 08544 "Best Management Practices for Pathogen Control in Manure Management Systems". For copies contact Karen Barenz of the MPCA (651-296-7902). The publication is also available in electronic format at www.extension.umn.edu. Authored by Mindy Spiehs and Sagar Goyal, the bulletin is targeted to livestock producers and agricultural professionals in Minnesota and the upper Midwest. Contact Les Everett, 612-625-6751 evere003@umn.edu



'Managing Grazing in Stream Corridors' Booklet Available from MDA

"Managing Grazing in Stream Corridors" is a new publication from the Department of Agriculture providing practical information for farmers managing livestock in pastures containing small streams and flowing riparian areas. It tells how to shift from continuous to rotational grazing using a variety of paddock designs. The 31-page booklet is available from the department, and can be downloaded from its Web site at: www.mda.state.mn.us/news/default.htm. From the news, media, events, and publications go to Related Information, click on All MDA Publications A-Z, and scroll down to the document.

MDA Offers Workshops on Agriculture Emergency Response

The Department of Agriculture has scheduled workshops around the state to improve data and information systems in responding to agriculture industry emergencies arising from natural disasters, disease, or other situations such as a large-scale power failure, or crime. Counties are being sought to participate in a pilot program to compile geographic location information on feedlots. Local communication is a key factor in dealing with emergencies. Workshop dates and locations are: Feb. 5-Lanesboro, Feb. 6-North Mankato, Feb. 12-Willmar, Feb. 21-New Brighton, March 4-Grand Rapids, March 18-Thief River Falls, March 20-Marshall. For more information contact the Dairy & Food Inspection Division, 651-201-6027.

Manure Application Planning Workshop Feb. 27-28

A two-day Manure Application Planning workshop will be presented by UM Extension Feb. 27-28 at the Victorian Inn, Hutchinson. A full description and registration form is available at https://umconnect.umn.edu/mapworkshop , or http://www.manure.umn.edu under Workshops and Training. The target audience is technical staff from NRCS, SWCD, CFO, MPCA, Extension and private consultants needing information on manure management related to nitrogen, phosphorus and manure management planning. This course replaces the previous Manure Management Planning Workshop Series MMP I, MMP II and MMP III offered by UMN Extension Service. The first day addresses nutrients in manure and UM nutrient recommendations. The second day addresses manure management plans. For more information contact David Schmidt, 612-625-4262, schmi071@umn.edu

Blanchet New Regional Extension Educator in Manure Systems

Minnesota Pollution Control Agency February 2008

WaterFront Bulletin

Water Restoration and Protection: Headlines and Deadlines

WaterFront is a web-based bulletin featuring updates on impaired waters, watershed project funding and water restoration and protection activities underway throughout the state. *WaterFront* is published to share information with internal MPCA staff and external watershed partners.

In this issue

PROJECT UPDATES

Social Indicator Tools Help Measure Non-Point Outcomes

The U.S. Environmental Protection Agency has received increased congressional demand to report on the outcomes of Section 319 Grant spending for non-point source water quality projects. To that end, the Social Indicators Evaluation Framework Initiative (SI) was developed to examine elements that measure behavior change. Representatives from land grant universities in the U.S. EPA Region Five states created the Social Indicators Data Management and Analysis (SIDMA) system to help implement the SI framework.

SIDMA provides standardized surveys for urban and rural target groups. The surveys are conducted at designated points to help measure behavior change over the course of the project. Minnesota is currently pilot testing the surveys with local project partners including the City of Duluth, the National Resources Research Institute, the Minnesota Sea Grant College Fund and Fortin Consulting. Eventually, all projects in Minnesota that receive 319 Grant funding could be asked to capture pre and post project data using the SIDMA surveys. For more information contact Karlyn Eckman, Water Resources Center, U of M, at 612-625-6781, or Kimberly Nuckles, MPCA, at 651-297-2810.

Rock River TMDL Implementation Plan: Volunteers Needed

The Rock River is located in southwest Minnesota and drains into Iowa where it joins the Big Sioux River and eventually the Missouri River. The public notice for a Total Maximum Daily Load addressing fecal coliform and turbidity impairments was recently completed. The next steps include submitting the TMDL to the U.S. EPA for final approval and developing an implementation plan to address the identified pollutant sources. Counties and agencies working on the project are seeking volunteers to help develop the implementation plan. Interested parties may contact Kelli Daberkow, MPCA-Marshall, 507-537-6497; or Rock County Land Management Office, 507-283-8862 ext. 3.

Appendix D: Comment Letters and MPCA Responses

Daberkow, Kelli

From: Leslie A. Everett [evere003@umn.edu]
Sent: Thursday, January 03, 2008 3:53 PM
To: Daberkow, Kelli
Subject: Comments on the Draft Rock River TMDL

Categories: TMDL Comments

Kelli Daberkow
Minnesota Pollution Control Agency
1420 East College Drive, Suite 900
Marshall, Minnesota 56258

These are my formal comments on the Draft Fecal Coliform and Turbidity TMDL Assessment for the Rock River:

1. My interest
As a participant in the Stakeholder Advisory Committee of the Lake Pepin and Minnesota River TMDLs I have an interest in seeing that those TMDLs which are completed prior to our TMDL report set a useful precedent.

2. Action needed by MPCA
The section labeled "Implementation Activities" should be very much strengthened. As currently written it is simply a list of possible activities that could be used to improve water quality, and is no different from activities currently in place. There are no grounds for claiming "reasonable assurance" that the water quality will be brought within standards. What practices applied to what extent and where, will bring water quality within standards by when? What will be done in addition to what is already being done, since current activities are apparently insufficient to meet water quality standards? Will there be additional regulations? Additional funding?

3. Reasons supporting this position
A list of possible activities is not a plan. Without a plan, the TMDL does not meet the test of "reasonable assurance" that the water quality standards will be met.

Thanks for the opportunity to comment.

Les Everett
Water Resources Center
University of Minnesota
173 McNeal Hall
1985 Buford Ave
St. Paul, MN 55108
tel 612-625-6751
email evere003@umn.edu
fax 612-625-1263

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Les Everett
Water Resources Center
University of Minnesota
173 McNeal Hall
1985 Buford Ave
St. Paul, MN 55108

Dear Mr. Everett:

Thank you for your comments in your January 3, 2008 e-mail on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. We appreciate that your organization took the time to review the draft document. The responses to your comments are provided below in italic.

1. My interest
As a participant in the Stakeholder Advisory Committee of the Lake Pepin and Minnesota River TMDLs I have an interest in seeing that those TMDLs which are completed prior to our TMDL report set a useful precedent.

Response: As the Minnesota Pollution Control Agency (MPCA) has moved forward with each TMDL, the process has become more efficient and there have been lessons learned that will be applied to future TMDL projects. The MPCA staff working on TMDLs are keeping other MPCA staff informed of issues, concerns, and ideas to ensure stronger, well-rounded TMDLs.

2. Action needed by the MPCA
The section labeled "Implementation Activities" should be very much strengthened. As currently written it is simply a list of possible activities that could be used to improve water quality, and is no different from activities currently in place. There are no grounds for claiming "reasonable assurance" that the water quality will be brought within standards. What practices applied to what extent and where, will bring water quality within standards by when? What will be done in addition to what is already being done, since current activities are apparently insufficient to meet water quality standards? Will there be additional regulations? Additional funding?

Response: As stated in Section 11.0-Implementation Activities, it was the intent of the Report to outline potential management practices that will address the impairments. Following the public notice process, a stakeholder committee composed of landowners, feedlot operators, crop producers and homeowners will develop a draft implementation plan that will outline specific management practices to address fecal coliform and turbidity. This draft implementation plan will then be reviewed by a technical committee. The implementation plan will include the following items: identification of priorities, nonpoint source and point source management measures alternatives and analysis, objectives and tasks, roles and responsibilities of project partners, a timeline, evaluation methods, an adaptive management structure

and a budget. It should also be noted that the Environmental Protection Agency (EPA) does not require an implementation plan; the MPCA does require an implementation plan within a year of the EPA approval of the Report.

Regarding reasonable assurance, research has shown pollutant reductions with the implementation of management measures. This research, along with the current interest of landowners and operators, indicates a potential for success in implementing various programs. Finally, local governmental units are dedicated to improving the water resources in their respective areas; most have goals in county Water Plans and overall plans to protect the Rock River. Through this TMDL, increased regulatory control is not anticipated. TMDLs are not enforceable. National Pollutant Discharge Elimination System (NPDES) permits offer an opportunity for increasing regulatory control; but this is not needed in this TMDL assessment. All of the NPDES permittees are in compliance with the requirements specified in their permits. Local governments also have the authority to increase regulatory controls as part of larger implementation efforts. The MPCA is not aware of a push to do so on the part of the local government project partners.

3. Reasons supporting this position
A list of possible activities is not a plan. Without a plan, the TMDL does not meet the test of "reasonable assurance" that the water quality standards will be met.

Response: See comment number 2's response.

Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

Daberkow, Kelli

From: Trojan, Mike
Sent: Monday, January 07, 2008 1:32 PM
To: Daberkow, Kelli
Subject: Rock River TMDL - stormwater comments

Kelli:

1. Summary Table 4 provides WLAs. Some of the headings are labeled "Individual LA". To be consistent, this should be changed to "Individual WLA".
2. Tables 8.11a, 8.11b and 8.11c provide summaries for allowable load. In some cases, construction or industrial stormwater have a WLA of 0. This means that under these flow conditions, construction and industrial stormwater discharges are not allowed. MPCA policy for setting stormwater WLAs (http://www.pca.state.mn.us/publications/wq-strm7-05.pdf) states construction and industrial stormwater can be given WLAs, but typically the preferred WLA is a de minimus WLA if the following two conditions are met.
   a. The contribution from construction or industrial stormwater is less than one percent of the total load; and
   b. The overall contribution for construction or industrial stormwater is difficult to quantify. Using an area approach to estimate loading is considered to meet the criteria of 'difficult to quantify'.

   Considering the above, I recommend that construction and industrial stormwater be given de minimus WLAs and the following language be inserted into the TMDL.
   - "Construction storm water activities are considered in compliance with provisions of the TMDL if they obtain a Construction General Permit under the NPDES program and properly select, install and maintain all BMPs required under the permit, or meet local construction stormwater requirements if they are more restrictive than requirements of the State General Permit."
   - "Industrial storm water activities are considered in compliance with provisions of the TMDL if they obtain an industrial stormwater general permit or General Sand and Gravel general permit (MNG49) under the NPDES program and properly select, install and maintain all BMPs required under the permit."

   If you disagree with this approach or if you feel this change is problematic at this point in the TMDL, perhaps we should discuss this, since a WLA of 0 is problematic.

Thanks.

Mike Trojan
Stormwater Section
Municipal Division

1/8/2008

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Mike Trojan
Minnesota Pollution Control Agency
Municipal Division
520 Lafayette Road North
St. Paul, MN 55155

Dear Mike:

Thank you for your comments in your January 3, 2008 email on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. I appreciate that you were able to review the draft document. The responses to your comments are provided below in italics.

1. Summary Table 4 provides WLAs. Some of the headings are labeled "Individual LA". To be consistent, this should be changed to "Individual WLA".

Response: Thank you for recognizing that typographical error. The heading has been changed to "Individual WLA".

2. Tables 8.11a, 8.11b and 8.11c provide summaries for allowable load. In some cases, construction or industrial stormwater have a WLA of 0. This means that under these flow conditions, construction and industrial stormwater discharges are not allowed. The MPCA policy for setting stormwater WLAs (http://www.pca.state.mn.us/publications/wq-strm7-05.pdf) states construction and industrial stormwater can be given WLAs, but typically the preferred WLA is a de minimus WLA if the following two conditions are met:

a. The contribution from construction or industrial stormwater is less than one percent of the total load; and
b. The overall contribution for construction or industrial stormwater is difficult to quantify. Using an area approach to estimate loading is considered to meet the criteria of 'difficult to quantify'.

Considering the above, I recommend that construction and industrial stormwater be given de minimus WLAs and the following language be inserted into the TMDL:

- "Construction storm water activities are considered in compliance with provisions of the TMDL if they obtain a Construction General Permit under the NPDES program and properly select, install and maintain all BMPs required under the permit, or meet local construction stormwater requirements if they are more restrictive than requirements of the State General Permit."

- "Industrial storm water activities are considered in compliance with provisions of the TMDL if they obtain an industrial stormwater general permit or General Sand and Gravel general permit (MNG49) under the NPDES program and properly select, install and maintain all BMPs required under the permit".

If you disagree with this approach or if you feel this change is problematic at this point in the TMDL, perhaps we should discuss this, since a WLA of 0 is problematic.

Response: Tables 8.11a-c show construction or industrial stormwater loads at zero, due to rounding of the numbers. The tables have been changed to show that the values are not zero. In addition, the suggested paragraphs have been added to page 50 in the Report.

Again, thank you, Mike, for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

Minnesota Farm Bureau Federation®

January 9, 2008

Kelli Daberkow
Minnesota Pollution Control Agency
1420 East College Drive, Suite 900
Marshall, Minnesota 56258

Dear Ms. Daberkow,

The Minnesota Farm Bureau Federation (Farm Bureau) appreciates the opportunity to comment on the Draft Rock River Fecal Coliform and Turbidity Total Maximum Daily Load (TMDL) Report. Agriculture is an important part of the Rock River watershed. Corn, soybeans, swine, beef, and dairy are the major commodities. Farm Bureau believes it is critical that MPCA work with individual producers, producer organizations, and agri-businesses in this watershed in implementing the objectives of this TMDL. We are pleased that MPCA is doing one TMDL for two impairments rather than separate TMDLs. This is a better use of time and resources.

Farm Bureau asks MPCA to consider the following points in the final development of this TMDL report and the subsequent implementation plan:

- **Agricultural Stakeholder Involvement**: Farm Bureau has been working to educate and engage farmers on impaired waters and the TMDL process in Minnesota. We believe it is imperative that agricultural stakeholders are not only made aware of this TMDL, but are an integral part of developing and approving the future implementation plan for the Rock River Fecal Coliform and Turbidity TMDL. Farm Bureau is willing to assist MPCA in engaging farmers during the implementation plan development stage of the TMDL. Farmers may be reluctant to participate because TMDL meetings are often overloaded with agency staff and environmental groups, creating an intimidating atmosphere. TMDL meetings, hearings, and comment periods should be scheduled at times that are conducive to farmer involvement (avoid the busy fall harvest and spring planting seasons). Simply notifying farmers of the meetings is not enough. On page vii, under public participation, it states "A group of local state and federal officials have been meeting on a bimonthly basis to receive TMDL updates and will lead the development of the implementation plan. There have been several new releases and newspaper articles about the project." In reviewing the Clean Water Legacy Act, it states "The agency shall seek broad and early public and stakeholder participation in scoping the activities necessary to develop a TMDL, including the scientific models, methods, and approaches to be used in TMDL development, and to implement restoration pursuant to section 114D.15, subdivision 7." We do not believe the agency has met the spirit of the law, especially the portion I have underlined above.

- **Research Needs**: Farm Bureau believes that there are significant research needs regarding the movement and survival of fecal coliform bacteria within watersheds and the accurate allocation of sources of turbidity. We also believe that there is a need for more DNA "fingerprinting" to properly determine all sources of fecal coliform. This process needs to be improved so we can properly allocate with reasonable certainty the background levels coming from wildlife, and the percentage coming from humans and pets, in order to make sure we aren't blaming livestock for more than their share. Farm Bureau believes it is important for MPCA to work with the Minnesota Department of Agriculture, the University of Minnesota, and producer organizations in undertaking future research projects to further investigate the fecal coliform and turbidity issues. This is of particular importance with respect to load reductions associated with specific BMPs. We need to be sure the BMPs we are recommending will actually have the desired effect. For example, incorporating manure is good for reducing odors, but do we know what effect that has on the transport of fecal coliform? Farm Bureau would like MPCA to incorporate a research component into the TMDL implementation plan. Because there are a number of fecal coliform and turbidity TMDLs that will be completed throughout MN over the next few years and funding for new research may be limited, we believe it is important that MPCA work with other watersheds in developing collaborative research strategies that will provide more insight on the intricacies of fecal coliform and turbidity impairments. Another possible research need could be the development of manure additives farmers could use

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Phone: 651.905.2100 Fax: 651.905.2159 Email: info@fbmn.org www.fbmn.org

during land application to reduce fecal coliform. In general, Farm Bureau policy supports the use of repeatable, peer-reviewed, scientific data through all phases of the TMDL, including the allocation of natural/background levels of various impairments. On page 31, the TMDL report assumes only 4% delivery ratio of the fecal coliform for geese, a number which seems extremely low to us. It would seem logical that the vast majority of fecal matter produced by geese would be deposited directly in the river or on the adjacent shore land. Can we say with any degree of certainty that the TMDL has allocated the correct degree of impairment caused by wildlife and other background sources? A recent article in the Washington Post refers to a Virginia Tech study that found 50 percent of the bacteria in streams came from wildlife (compared to 16-24% from humans, and only 10% from livestock). Wildlife may produce a smaller percentage of bacteria; however, a much larger percentage of what they produce gets into the water, especially in the case of waterfowl. On page 25, the report says "Conditions when wildlife can be a significant source include isolated areas of high density and during low flow/drought conditions." Is this correlated to the spike in fecal coliform levels in August and September? There are more wildlife than pets (p. 26), yet pets are assigned 9 times as much fecal coliform production (p.28). That seems illogical. Stream bank erosion is an important contributing source of turbidity. What is the estimate for natural/background levels of turbidity from bank erosion? MPCA staff have stated that recent preliminary studies are suggesting as much as 40-80% of turbidity is caused by stream bank erosion, yet this report says "…it can be assumed that higher flows are causing turbid conditions from overland runoff" (p.55). A recent presentation at the Lake Pepin TMDL stakeholder group noted that the majority of sediment was coming from near channel sources, not from overland run-off. Perhaps the assumptions in this TMDL are incorrect.

- **Adaptive Management**: Farm Bureau encourages the use of adaptive management principles when new information (i.e. monitoring or research data) and new best management practices (BMPs) are available that will be helpful in updating and/or redirecting the load reduction goals and implementation steps for the TMDL. In addition, adaptive management should be used to incorporate future fecal coliform and turbidity impairments within the watershed into this TMDL over time, rather than constructing separate, new TMDLs. It is also vitally important that we consider the feasibility of attaining the water quality standards for each impaired water body. Is it realistic to expect a 60% reduction in fecal coliform and a 68% reduction in turbidity (especially since 40-80% of the turbidity is likely caused by streambank erosion)? There may be some cases where the reductions needed to meet water quality standards are not realistic. In those cases the TMDL plan should include a strategy for re-evaluating the designated use of those water bodies. We are concerned that many water bodies were arbitrarily assigned a designated use, which may be inappropriate.

- **Implementation Strategies**: Farm Bureau would encourage the Agency to develop an implementation plan that focuses voluntary adoption of agricultural BMPs and upgrading non-compliant septic systems to meet the goal of improved water quality. We encourage those involved in implementing this TMDL to seek funding to provide additional incentives for septic system upgrades, fencing for rotational grazing and BMP adoption in high priority areas. We encourage MPCA and other agencies involved in TMDL development to focus on voluntary, incentive-based BMPs for this and all TMDL projects. The implementation activities mentioned on p. 59-62 contain very little information on how any of these activities will be paid for.

Please consider Farm Bureau's comments in the development of the Rock River Fecal Coliform and Turbidity TMDL report. If you have any questions about Farm Bureau's comments, please contact Jeremy Geske or Chris Radatz at 651-905-2100.

Sincerely,

Kevin Paap

Kevin Paap
President
Minnesota Farm Bureau Federation

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Kevin Paap, President
Minnesota Farm Bureau Federation
PO Box 64370
St. Paul, MN 55164-0370

Dear Mr. Paap:

Thank you for your comments in the January 9, 2008 letter on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. The MPCA appreciates that your organization took the time to review the draft document. The responses to your comments are provided below in italics.

Agricultural Stakeholder Involvement: Farm Bureau has been working to educate and engage farmers on impaired waters and the TMDL process in Minnesota. We believe it is imperative that agricultural stakeholders are not only made aware of this TMDL, but are an integral part of developing and approving the future implementation plan for the Rock River Fecal Coliform and Turbidity TMDL. Farm Bureau is willing to assist MPCA in engaging farmers during the implementation plan development stage of the TMDL. Farmers may be reluctant to participate because TMDL meetings are often overloaded with agency staff and environmental groups, creating an intimidating atmosphere. TMDL meetings, hearings, and comment periods should be scheduled at times that are conducive to farmer involvement (avoid the busy fall harvest and spring planting seasons). Simply notifying farmers of the meetings is not enough. On page vii, under public participation, it states "A group of local, state, and federal officials have been meeting on a bimonthly basis to receive TMDL updates and will lead the development of the implementation plan. There have been several news releases and newspaper articles about the project". In reviewing the Clean Water Legacy Act, it states "The agency shall seek broad and early stakeholder participation in scoping the activities necessary to develop a TMDL including the scientific models, methods and approaches to be used in TMDL development and to implement restoration pursuant to section 114D.15 subdivision 7". We do not believe the agency has met the spirit of the law, especially the portion I have underlined above.

Response: Thank you for your efforts in engaging farmers in the TMDL process. TMDLs have many components and can affect many stakeholders. Farm Bureau's dedication to providing your constituents with information is helpful to the MPCA and TMDL projects. A process has been developed to guide the upcoming task of creating an implementation plan. The foundation of the implementation plan is to have buy-in from stakeholders in the Rock River watershed. Personalized letters requesting input and assistance were sent to agricultural groups, targeted individuals, and environmental groups in January 2008.

150 YEARS of STATEHOOD

In addition, at the public meetings held on January 24, 2008, input and sign up of interested individuals to serve on an Advisory Committee was requested. There were several individuals, mostly farmers that agreed to serve on the committee. If needed, we will contact you for additional stakeholders to serve on the Advisory Committee.

This TMDL project, from the beginning, has made several attempts to involve the public through information and education. Section 13.0-Public Participation in the Report outlines the activities and publications which the Technical Committee committed time and resources, in order to provide the public with information. Some specific examples include a public meeting at the beginning of the TMDL process to inform interested individuals, articles in the Worthington Daily Globe and the Rock County Star Herald newspapers, several newsletter articles providing updates, and a project website. The MPCA was also in direct contact with the Minnesota Department of Agriculture to assist with informing stakeholders. In each of these activities, contact information was available for those needing more information. With the development of the Advisory Committee, direct stakeholder involvement will increase.

Research Needs: Farm Bureau believes that there are significant research needs regarding the movement and survival of fecal coliform bacteria within watersheds and accurate location of sources of turbidity. We also believe that there is a need for more DNA "fingerprinting" to properly determine all sources of fecal coliform. This process needs to be improved so we can properly allocate with reasonable certainty the background levels coming from wildlife, and the percentage coming from humans and pets, in order to make sure we aren't blaming livestock for more than their share. Farm Bureau believes it is important for MPCA to work with the Minnesota Department of Agriculture, the University of Minnesota, and producer organizations in undertaking future research projects to further investigate the fecal coliform and turbidity issues. This is of particular importance with respect to load reductions associated with specific BMPs. We need to be sure the BMPs we are recommending will actually have the desired effect. For example, incorporating manure is good for reducing odor, but do we know what effect that has on the transport of fecal coliform? Farm Bureau would like MPCA to incorporate a research component into the TMDL implementation plan. Because there are a number of fecal coliform and turbidity TMDLs that will be completed throughout Minnesota over the next few years and funding for new research may be limited, we believe it is important that MPCA work with other watersheds in developing collaborative research strategies that will provide more insight on the intricacies of fecal coliform and turbidity impairments. Another possible research need could be the development of manure additives farmers could use during land application to reduce fecal coliform. In general, Farm Bureau policy supports the use of repeatable, peer-reviewed, scientific data through all phases of the TMDL, including the allocation of natural/background levels of various impairments. On page 31, the TMDL report assumes only 4% delivery ratio of the fecal coliform for geese, a number which seems extremely low to us. It would seem logical that the vast majority of fecal matter produced by geese would be directly deposit in the river or on the adjacent shore land. Can we say with any degree of certainty that the TMDL has allocated the correct degree of impairment caused by wildlife and other background sources? A recent article in the Washington Post refers to a Virginia Tech study that found 50 percent of bacteria in

streams came from wildlife (compared to 16-24 % from humans and only 10 percent from livestock). Wildlife may produce a smaller percentage of bacteria; however, a much larger percentage of what they produce gets into the water, especially in the case of waterfowl. On page 25, the report says "Conditions when wildlife can be a significant source include isolated areas of high density and during low flow/drought conditions". Is this correlated to the spike in fecal coliform levels in August and September? There is more wildlife than pets (p. 26) yet pets are assigned 9 times as much fecal coliform production (p. 28). That seems illogical. Stream bank erosion is an important contributing source of turbidity. What is the estimate for natural/background levels of turbidity from bank erosion? MPCA staff have stated that recent preliminary studies are suggesting as much as 40-80% of turbidity is caused be stream bank erosion, yet this report says "…it can be assumed that higher flows are causing turbid conditions from overland runoff" (p.55). A recent presentation at the Lake Pepin TMDL stakeholder group noted that the majority of sediment was coming from near channel sources, not from overland run-off. Perhaps the assumptions in the TMDL are incorrect.

Response: There has been and continues to be research in Minnesota and throughout the country regarding the sources, movement, and survival of bacteria in watersheds. DNA fingerprinting may prove to be important to the understanding of fecal coliform bacteria and research is needed. This technology can be very time consuming and expensive but there are studies across the United States where DNA fingerprinting has been used for TMDLs. Currently in Minnesota, the Minnesota Department of Agriculture and several partners are conducting a project where this technology is used. As results become available, they can be applied to the Rock River through adaptive management principles.

We generally prefer our local projects, with their limited resources, to focus on implementation efforts rather than research, although some investigative-type monitoring may be appropriate. Regarding the effectiveness of BMPs, there are research projects at the state and national level as well as through universities to understand potential load reductions and effectiveness rates. This information is used and applied to TMDLs where similar watershed characteristics are apparent.

For your concerns on the allocations for geese, the Report uses the best data and information available. It is estimated that there are approximately 2,500 resident geese on the Rock River. While most of their time may be spent in or adjacent to the water, the amount of bacteria produced compared to livestock is quite different. As shown in Table 5.4, there is an estimated delivery ratio of four percent which is the second highest percentage shown. The Virginia Tech study you mentioned was mostly a forested region with only 30 percent of its land use in agriculture as compared to 95 percent of the Rock River watershed classified as agricultural. In addition, one of the three watersheds in this study did not have any documented livestock.

The samples collected during August and September were during storm events. This points to overland runoff as a likely source of higher bacteria levels.

Table 5.2 shows pets produce at least one order of magnitude more fecal coliform bacteria than wildlife. When applying this to the Rock River watershed, there would need to be over six times the amount of wildlife to produce as much bacteria as pets do. The amount of fecal coliform produced by each animal is based upon the recommendations in the Environmental Protection Agency's (EPA) Protocol for Developing Pathogen TMDLs (January 2001).

The Report did not define the amount of the turbidity impairment that was coming from upland erosion versus in-stream dynamics. Time, cost, and available data were the determining factors on the source assessment portion of the Report. As shown in the Report, a GIS application and monitoring data was utilized to analyze and document likely sources. Review of other research indicates many factors such as drainage, soils, slope, land use, rainfall, and watershed size all influence the amount of soil movement and detachment. As research results from Lake Pepin and other projects become available, they can be applied to the Rock River and other watersheds through adaptive management principles.

Adaptive Management: Farm Bureau encourages the use of adaptive management principles when new information (i.e. monitoring or research data) and new best management practices (BMPs) are available that will be helpful in updating and/or redirecting the load reduction goals and implementation steps for the TMDL. In addition, adaptive management should be used to incorporate future fecal coliform impairments within the Rock River Watershed into this TMDL over time, rather than constructing separate, new TMDLs. It is also vitally important that we consider the feasibility of attaining the water quality standards for each impaired water body. Is it realistic to expect a 60% reduction in fecal coliform and a 68% reduction in turbidity (especially since 40-80% of the turbidity is likely caused by stream bank erosion)? There may be some cases where the reductions needed to meet water quality standards are not realistic. In those cases the TMDL plan should include a strategy for re-evaluating the designated use of those water bodies. We are concerned that many water bodies were arbitrarily assigned a designated use, which in some cases may be inappropriate.

Response: A part of the implementation plan will be adaptive management and using new research to define future actions. If different reaches within the Rock River watershed are added to the 303(d) List, the MPCA agrees that incorporating the future listings into this Report as an addendum is important.

In impaired watersheds in southern Minnesota, it is not uncommon to have greater than fifty percent reductions needed. While attainment of these reductions may not seem feasible under current land use conditions, we believe aggressive attempts to address the impairments and improve the water quality is essential. The MPCA does not intend to include a strategy to re-evaluate the designated use of this water body if the standards are not achieved, because the only available reclassification option, "Class 7-Limited Resource Value", would not provide adequate protection of this resource. The MPCA is considering adopting a Tiered Aquatic Life Uses (TALU) framework in which biological and physical data is used to assess the aquatic life use of Minnesota's streams. It is unknown at this point, how and if this would affect the Rock

River. A TALU adoption plan is currently being developed and stakeholder meetings are planned for later this year.

Implementation Strategies: Farm Bureau would encourage the Agency to develop an implementation plan that focuses voluntary adoption of agricultural BMPs and upgrading non-compliant septic systems to meet the goal of improved water quality. We encourage those involved in implementing this TMDL to seek funding to provide additional incentives for septic system updates, fencing for rotational grazing and BMP adoption in high priority areas. We encourage MPCA and other agencies involved in TMDL development to focus on voluntary, incentive-based BMPs for this and all TMDL projects. The implementation activities mentioned on p. 59-62 contain very little information on how any of these activities will be paid for.

Response: As mentioned in the Report and also in the Stakeholder Involvement response, an Advisory Committee will be established that will be instrumental in developing the implementation plan. Adoption of BMPs will most likely be a part of this plan. The implementation activities listed in Section 11.0-Implementation Activities in the Report are possible BMPs that can be effective in reducing bacteria and turbidity in the Rock River watershed. A part of the Implementation Plan development process is to evaluate all possible BMPs and through analysis and justification, determine the BMPs that will be most effective in the Rock River watershed.

Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

BOARD OF COMMISSIONERS

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P.O. Box 757
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Phone: 507-295-5201
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commissioner@co.nobles.mn.us

"Improving the quality of life for individuals, families and communities by fostering a healthy economy and environment."

January 25, 2008

Kelli Daberkow
Minnesota Pollution Control Agency
1420 East College Drive, Suite 900
Marshall, MN 56258

Dear Ms Daberkow:

The Nobles County Board appreciates the opportunity to comment on the Draft Rock River Fecal Coliform and Turbidity Total Maximum Daily Load (TMDL) Report.

The Nobles County Board asks the MPCA to consider the facts involving the study. This suggests that more research is needed regarding the movement and survival of fecal coliform bacteria; that there is a need for DNA "fingerprinting" to properly determine the sources; that adaptive management principles and implementation strategies be applied.

Economically, agriculture/animal agriculture is a large part of the Rock River watershed. The Nobles County Board strongly believes MPCA needs to take into consideration the above facts when working with producers and agri-businesses when implementing the TMDL objectives within the watershed.

Please consider the County Board's comments when the above report is compiled. In the event you should have questions, you may contact me at 507-483-2833.

Sincerely,

Diane Thier

Diane Thier
County Board, Chair

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Commissioner Diane Thier
Nobles County Board of Commissioners
315 Tenth Street
PO Box 757
Worthington, MN 56187

Dear Commissioner Thier:

This letter is in response to your comments dated January 25, 2008 regarding the *Rock River Fecal Coliform and Turbidity Total Maximum Daily Load (TMDL) Report*. Thank you for taking the time to review the report and provide comments in a timely matter. The response to your comments is below in italics.

Comment: The Nobles County Board asks the MPCA to consider the facts involving the study. This suggests that more research is needed regarding the movement and survival of fecal coliform bacteria; that there is a need for DNA "fingerprinting" to properly determine the sources; that adaptive management principles and implementation strategies be applied.

Response: There has been and continues to be research in Minnesota and throughout the country regarding the sources, movement, and survival of bacteria in watersheds. DNA fingerprinting is an emerging technology that can be used for source identification of fecal coliform bacteria. This technology can be very time consuming and expensive but has been utilized in TMDLs. In Minnesota, the Minnesota Department of Agriculture and several partners are conducting a project where this technology is used. As results become available, they can be applied to the Rock River through adaptive management principles.

Following the Environmental Protection Agency's approval of the TMDL report, an implementation plan will be developed locally. The Rock County Land Management Office will be leading this effort. This plan will include strategies to clean up the Rock River, budget, timeline, adaptive management principles and roles and responsibilities of partners. Volunteers are needed to serve on an Advisory Committee to develop the implementation plan that will meet the needs of the Rock River watershed residents. If you know of individuals that may be interested, please feel free to contact me.

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Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

MINNESOTA DEPARTMENT OF AGRICULTURE
FROM THE FARM TO YOUR FAMILY

January 29, 2008

Kelli Daberkow
MPCA
1420 E College Dr., Suite 900
Marshall, MN 56258

RE: Draft Fecal Coliform and Turbidity TMDL Assessment for the Rock River

Dear Ms. Daberkow:

The Minnesota Department of Agriculture (MDA) appreciates the opportunity to comment on the Draft Fecal Coliform and Turbidity TMDL Assessment for the Rock River. The MDA is interested in this TMDL report because a significant amount of land in the Rock River watershed is rural and in agricultural use.

The MDA believes the Minnesota Pollution Control Agency (MPCA) should consider the following comments in the development of this TMDL report and subsequent implementation plan:

General Comments

- Agricultural Stakeholder Involvement: The MDA has been working with the MPCA and other State Agencies to educate and engage agricultural stakeholders on the impaired waters and TMDL process in Minnesota. It is imperative that agricultural stakeholders be engaged in every facet of the TMDL process particularly in agricultural watersheds. This not only includes stakeholder meetings but should also include technical advisory committee meetings for both the TMDL study as well as the implementation plan. The MDA offers to assist TMDL project managers in engaging representatives from the agricultural community outside of state and local agencies.
- Adaptive Management: The MDA believes it is important for the MPCA and TMDL project managers to reopen TMDL studies when new information such as monitoring data, modeling efforts, or research findings would affect load allocations or implementation strategies cited in the original studies.
- Research Needs: The MDA believes that there are significant needs for researching the fate, transport, and resiliency of fecal coliform bacteria within agricultural watersheds. More research is also needed to refine sediment budgets in different physiographic regions of the state and to develop more effective best management practice (BMP) implementation strategies that are targeted to critical sources in the landscape. These research areas will have implications for both load allocation estimates as well as implementation plans to meet water quality goals.
- Agricultural Practices and Funding: The MDA AgBMP loan program will be a very good vehicle to provide funding for installing new practices that will help reduce fecal coliform levels from livestock production systems and from individual sewage treatment systems (ISTS). AgBMP loans can also be used to implement BMPs that will help the agricultural sector meet the load reduction goals of this TMDL. If you have any

questions about the AgBMP loan program and how it can be utilized to address TMDLs, pleas contact MDA staff person Dwight Wilcox at (651) 201-6618.

- Monitoring Plan: A more detailed monitoring plan should be developed recognizing that its implementation would be contingent on funding. For the fecal coliform bacteria impairment, more data is needed to determine the geographic scope of the impairment. This is also true of the turbidity impairments particularly for reaches in which transparency tube data was used for the listing process. For these sites, TSS and/or turbidity data using USEPA approved methods should be utilized. The monitoring plan should also address sample frequency with respect to the flow regimes and outline how BMP effectiveness will be evaluated.

The following are comments on specific sections of the TMDL report as indicated by the page number of the report.

Fecal Coliform

- (pg viii) The report states that the Rock River exceeded water quality standards during the months of August and September and that fecal coliform levels will need to be decreased up to 60% during these months. The time period should be specified, because page 32 states that data collected from 1985 through 1994 indicate that the stream was impaired in the months of May and September. How was the 60% reduction figure calculated as it is not referenced anywhere in the remainder of the report?
- (p13. Section 3.6) Were the minimum number of samples available for August and September from 1997 through 2006 to meet the definition of an exceedance (geometric mean based on a minimum of five monthly samples over previous ten years) to determine that it remains to be impaired for fecal coliform? This should be specified to avoid confusion. Table 2.1 states that the Rock River was listed in 1994; however, the report states that it was first listed as impaired in 1992.
- (p14. Section 3.8) Monitoring should be a high priority to determine the spatial extent of the impairment. Given that the reach drains a large watershed (>300,000 acres) and that fate and transport mechanisms for fecal coliform are not well documented, assumptions regarding the geographic scope of the impairment should be addressed with monitoring.
- (p16. Section 3.10) Figure 3.1 suggests that conditions improved from the 1960's to the 1970's though there were a relatively limited number of samples collected in the 1960's compared to the other decades. Were there any documented changes in sources of fecal coliform during that time period that would provide insight into sources that should be prioritized today?
- (p19. Figure 4.1.2) The distribution of unsewered communities and density of inadequately functioning septic systems suggests that these sources are not distributed uniformly throughout the watershed. The impaired reach is in close proximity to two unsewered communities and the highest density of inadequately functioning septic systems in the watershed. Again, this highlights the need to conduct further monitoring to characterize the extent and magnitude of the impairment.
- (p20. Section 4.2) The report cites that 58% of the manure is incorporated and 13% is field surface applied. What source of information is being used to make these distinctions? Are these percentages expressed as fecal matter produced?

- (p24. Section 4.2.3) How is the pastureland within 1000 ft of a waterway distributed throughout the watershed?
- (p29. Section 5.3) The report states that assumptions derived from the GEIS on Animal Agriculture were made for livestock. Which assumptions are being referenced? Is the report referring to assumptions made about manure application methods?
- (p31. Section 5.5) Table 5.5 is very informative. Can the target areas for fecal coliform reduction be further refined based on when the impairments are observed? For instance, recent data indicates that the impairments occur in August and September. Figure 2.5 shows that mean streamflow is lowest during these months. Wouldn't this suggest that pastures within 1000 ft. of waterways and inadequately treated wastewater would be sources of highest priority? If land application of manure was a primary source of the impairment via preferential flow mechanisms as stated on page 23, wouldn't the elevated concentrations be observed during months when a majority of the manure is applied and surface/subsurface flow is most prevalent? The studies cited suggest that the preferential flow pathways would result in a rapid transport of the bacteria. Furthermore, page 31 of the report states that the majority of bacterial loading to streams occurs during wet conditions; however, page 15 states that the highest fecal coliform bacteria concentrations are found in the summer and early fall. If the elevated concentrations observed in August and September are linked to the spring applications of manure due to the influence of stream temperature, this highlights the need for further research into the relationship between manure management practices and the origin, fate, and transport of fecal coliform from agricultural systems.
- (p39. Section 6.8) It may be helpful to construct a load duration curve to illustrate the data in Table 6.8. Including the water quality data would also assist in graphically representing when the exceedances occur.
- (p59. Section 11.0) Implementation practices should be specified for fecal coliform verses turbidity to avoid confusion. Practices intended for both impairments should be specified. There are a number of Technical Service Providers (TSP) that can assist producers with developing and implementing manure management plans. The Clean Water Legacy Act requires that a TMDL include a range of cost estimates for implementation of the TMDL.
- (p60. Section 11.4) The MDA has recently released a document on managing grazing in stream corridors that could also be referenced in this section: http://www.mda.state.mn.us/news/publications/animals/livestockproduction/grazing.pdf .

Turbidity

- (p43. Section 8.2) What is the justification for using the "Duration Curve" approach for the three turbidity TMDLs in this instance?
- (p45. Section 8.5) The report states that the watershed remains fairly uniform from headwaters to the monitoring station located at the Minnesota/Iowa border. Which variables are uniform? Is the report referring to land use?
- (p48. Section 8.9) The Elk Creek Watershed is significantly smaller than the other impaired reaches. How appropriate is it to use the flow conversion factor in this instance? It seems monitoring data is needed to quantify both the flow and sediment contribution to the data observed at the Rock River on the Minnesota/Iowa border.

- (p53. Section 9) Turbidity Assessment for the Rock River Watershed: This section utilizes the flow data collected at Luverne and the water quality data collected from the Minnesota/Iowa monitoring station. How appropriate is it to apply this data to the Elk River Watershed? Statements made in this section regarding the magnitude, timing, and sources of TSS may not be appropriate for the Elk River Watershed given the differences in watershed size and other potential sources of sediment. For instance, figure 9.4 indicates that slope is not uniformly distributed throughout the watershed with steeper areas in the headwaters. How are the other variables related to sediment sources distributed throughout the watershed such as crop residue levels, geomorphology, and soil erodibility (k factor)? The report states that this section details the most recent ten-year period of TSS loading but the graphs indicate that the data represents 1995-2006.
- (p54. Section 9.2) The reduction estimates for high flows are based on a very limited number of samples. The graph indicates that only 2 of the samples exceed the standard during the highest flows. Monitoring should be conducted to refine this estimate.
- (p54. Section 9.3) This is the first time the load reduction goal is stated (i.e. fewer than ten percent of samples may exceed 25 NTU). This needs to be presented more explicitly at the outset of the turbidity portion of the report. How will the standard be applied? Will this represent ten percent of the samples over the course of a year or flow regime?
- (p56. Section 9.3) The report states that overall, the major sources of excess turbidity in the Rock River during higher flows are streambank erosion and upland soil loss. The MPCA Turbidity TMDL Protocols suggest that projects should identify and evaluate factors contributing to streambank instability if streambank and channel contributions to turbidity are driving factors for elevated turbidity. Is an assessment of stream stability warranted in this instance to further refine the magnitude of sediment sources?

Please consider the MDA's comments in the development of the Final Rock River Fecal Coliform Bacteria and Turbidity TMDL report. If you have any questions about the MDA's comments, please contact Becky Balk at (651) 201-6369.

Sincerely,

Joe Martin
Assistant Commissioner
Minnesota Department of Agriculture

CC:
Jim Boerboom, MDA
Bob Patton, MDA
Becky Balk, MDA
Dan Stoddard, MDA
Adam Birr, MDA
Wayne Anderson, MPCA

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Joe Martin
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155

Dear Mr. Martin:

Thank you for your comments in the January 29, 2008 letter on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. The MPCA appreciates that your organization took the time to review the draft document. The responses to your comments are provided below in italics.

General Comments

- Agricultural Stakeholder Involvement: The MDA has been working with the MPCA and other State Agencies to educate and engage agricultural stakeholders on the impaired waters and TMDL process in Minnesota. It is imperative that agricultural stakeholders be engaged in every facet of the TMDL process particularly in agricultural watersheds. This not only includes stakeholder meetings but should also include technical advisory committee meetings for both the TMDL study as well as the implementation plan. The MDA offers to assist TMDL project managers in engaging representatives from the agricultural community outside of state and local agencies.

Response: Thank you for your efforts in engaging and educating stakeholders in the TMDL process. As you know, TMDLs have many components and can affect many stakeholders. The Minnesota Department of Agriculture's dedication to providing farmers, landowners, and operators with information is helpful to the MPCA and TMDL projects. It has been extremely helpful to have Becky Balk in contact with the MPCA and the project managers.

A process has been developed to guide the upcoming task of creating an implementation plan. The foundation of the implementation plan is to have buy-in from stakeholders in the Rock River watershed. Personalized letters requesting input and assistance were sent to agricultural groups, targeted individuals, and environmental groups in January 2008. In addition, at the public meetings held on January 24, 2008, input and sign-up of interested individuals to serve on an Advisory Committee was requested. There were several individuals, mostly farmers that agreed to serve on the committee. If needed, we will contact you for additional stakeholders to serve on the Advisory Committee.

Adaptive Management: The MDA believes it is important for the MPCA and TMDL project managers to reopen TMDL studies when new information such as monitoring data, modeling

efforts, or research findings would affect load allocations or implementation strategies cited in the original studies.

Response: Adaptive management principles will be used in the implementation of the TMDL as new information will most certainly become available. Additional monitoring and studies are a part of the implementation plan. If there are additional impairments listed, the Environmental Protection Agency (EPA) has suggested attaching new impairments/revisions to the existing TMDL Report. A public notice process will need to take place at that time.

- Research Needs: The MDA believes that there are significant needs for researching the fate, transport, and resiliency of fecal coliform bacteria within agricultural watersheds. More research is also needed to refine sediment budgets in different physiographic regions of the state and to develop more effective best management practice (BMP) implementation strategies that are targeted to critical sources in the landscape. These research areas will have implications for both load allocation estimates as well as implementation plans to meet water quality goals.

Response: The MPCA along with several local, state, and federal entities and academic institutions are researching the items addressed above. These research efforts will provide the MPCA and its partners with the best answers, techniques, and solutions. The MPCA strives to obtain the best possible data, information, and knowledge in order to produce defensible TMDLs, while operating under timelines that do not always align with the publication of research results.

- Agricultural Practices and Funding: The MDA AgBMP loan program will be a very good vehicle to provide funding for installing new practices that will help reduce fecal coliform levels from livestock production systems and from individual sewage treatment systems (ISTS). AgBMP loans can also be used to implement BMPs that will help the agricultural sector meet the load reduction goals of this TMDL. If you have any questions about the AgBMP loan program and how it can be utilized to address TMDLs, please contact MDA staff person Dwight Wilcox at (651) 201-6618.

Response: As mentioned in the Report and also in the response to the Agricultural Stakeholder Involvement comment, an Advisory Committee will be established that will be instrumental in the implementation plan development. Adoption of BMPs will most likely be a part of this plan. In the Implementation Plan development process, an evaluation of all possible BMPs, through analysis and justification, will determine the BMPs that will be most effective in the Rock River watershed. Thank you for providing the AgBMP loan option in the Clean Water Legacy Act to be used in these TMDL projects as they move into the implementation phase. Mr. Wilcox's contact information will be passed onto the local entity leading the implementation plan development.

- Monitoring Plan: A more detailed monitoring plan should be developed recognizing that its implementation would be contingent on funding. For the fecal coliform bacteria impairment, more data is needed to determine the geographic scope of the impairment. This is also true of the turbidity impairments particularly for reaches in which transparency tube data was used for the listing process. For these sites, TSS and/or turbidity data using USEPA approved methods should

be utilized. The monitoring plan should also address sample frequency with respect to the flow regimes and outline how BMP effectiveness will be evaluated.
Response: Monitoring is definitely an important part of TMDLs. In the Rock River watershed, the MPCA and the project consultant agreed there was adequate data available to develop the TMDL. There is more monitoring could be done and that is happening at several sites. Currently, Rock County Land Management Office (RCLMO), in partnership with the City of Luverne and Rock County Rural Water System are monitoring four sites along the Rock River to gather more information. In addition, RCLMO collected water samples for the MPCA at one site in Luverne. A detailed monitoring plan will be included in the implementation plan that will be used to track BMP effectiveness. In other watershed projects, data at a subwatershed level shows improvements in water quality. This is the goal for the Rock River watershed.

Regarding the comment on the use of transparency tube data, the MPCA has conducted analysis showing a strong relationship between transparency and turbidity. In addition, waters are not listed based exclusively on transparency data unless there is corroboration from a local or state water resource manager.
The following are comments on specific sections of the TMDL report as indicated by the page number of the report.

Fecal Coliform

- (pg viii) The report states that the Rock River exceeded water quality standards during the months of August and September and that fecal coliform levels will need to be decreased up to 60% during these months. The time period should be specified, because page 32 states that data collected from 1985 through 1994 indicate that the stream was impaired in the months of May and September. How was the 60% reduction figure calculated as it is not referenced anywhere in the remainder of the report?

Response: The information shown on page 32 references the dataset that was used to list the Rock River (data was collected between 1985 and 1994). The dataset showing the impairment in August and September was based on the most recently collected data from 1997-2006. The percent reduction was developed through a simple equation:

$$\frac{\text{current monthly geomean-water quality standard}}{\text{water quality standard}} = \text{percent reduction}$$

This was not added to the Report because the EPA does not approve reductions, only daily loads. The percent reduction is merely an easily understood concept and was included in the Executive Summary. Based on your comment, this will be added to Section 3.6 of the Report.

- (p13. Section 3.6) Were the minimum number of samples available for August and September from 1997 through 2006 to meet the definition of an exceedance (geometric mean based on a minimum of five monthly samples over previous ten years) to determine that it remains to be impaired for fecal coliform? This should be specified to avoid confusion. Table 2.1

states that the Rock River was listed in 1994; however, the report states that it was first listed as impaired in 1992.
Response: Each of the months from April through October had at least five observations to calculate a geomean. The numbers of samples for each month were as follows: April (6), May (5), June (5), July (5), August (8), September (6), and October (5). The number of samples collected per month will be added to Figure 3.6. The Rock River was listed for fecal coliform in 1994. The error on page 13 has been changed.

- (p14. Section 3.8) Monitoring should be a high priority to determine the spatial extent of the impairment. Given that the reach drains a large watershed (>300,000 acres) and that fate and transport mechanisms for fecal coliform are not well documented, assumptions regarding the geographic scope of the impairment should be addressed with monitoring.
Response: This is a valid point. As mentioned above, currently there is monitoring throughout the Rock River watershed that should be helpful in documenting trends, impairments, and addressing the geographic scope. There will also be additional monitoring in the implementation portion of this project.

- (p16. Section 3.10) Figure 3.1 suggests that conditions improved from the 1960's to the 1970's though there were a relatively limited number of samples collected in the 1960's compared to the other decades. Were there any documented changes in sources of fecal coliform during that time period that would provide insight into sources that should be prioritized today?
Response: Yes, there are documented changes in land use, but the changes provide minimal direction for prioritization for the watershed today. Overall, the largest changes have been related to the change in livestock and the implementation of the Clean Water Act (CWA). In 1972, through the CWA, the National Pollutant Discharge Elimination System/State Disposal System program was initiated and pollutant limits were established for communities with a wastewater treatment facility. There are only three communities in the watershed that remain unsewered. The changes in livestock relate to the increased confinement building set up and decreased grazing.

- (p19. Figure 4.1.2) The distribution of unsewered communities and density of inadequately functioning septic systems suggests that these sources are not distributed uniformly throughout the watershed. The impaired reach is in close proximity to two unsewered communities and the highest density of inadequately functioning septic systems in the watershed. Again, this highlights the need to conduct further monitoring to characterize the extent and magnitude of the impairment.
Response: There may be additional fecal coliform impairments in the watershed. However, the impaired reach is the only location in the watershed that was sampled for fecal coliform bacteria. Solely linking the unsewered communities and inadequately functioning septic systems to the impairment would be unjustified without collecting additional water quality data upstream. In addition, while the two unsewered communities are in close proximity to the impaired reach, these communities only have an estimated five inadequately functioning systems within the watershed boundary.

- (p20. Section 4.2) The report cites that 58% of the manure is incorporated and 13% is field surface applied. What source of information is being used to make these distinctions? Are these percentages expressed as fecal matter produced?
Response: These percentages were developed using the data and assumptions in Table 5.3. The assumptions were derived in part from the report titled, "Generic Environmental Impact Statement on Animal Agriculture" (Minnesota Environmental Quality Board) and updated based on input from the Technical Committee. Table 5.3 shows that following percentages of manure from different livestock types are surface applied: dairy - 37 percent; beef - 17.5 percent; swine - 5%, horse, sheep, etc. 49.5 percent; and chicken - 49.5 percent. As an example, multiplying 37 percent dairy manure by 14,081 dairy animal units (AU) equals 5,210 AU; performing this calculation for each of the five types of livestock and summing all the animal units will produce the total AU contributing to surface applied manure. Then by simple division of 19,183 AU contributing to surface applied manure/151,222 total AU equals 13 percent. These percentages are related to animal units not bacteria produced. The MPCA fully acknowledges that these are best estimates designed to help inform implementation efforts.

- (p24. Section 4.2.3) How is the pastureland within 1000 ft of a waterway distributed throughout the watershed?
Response: Based on GIS analysis, 79 percent of pasture land was within 1,000 feet of a stream, river or creek. The distribution was fairly uniform across the watershed.

- (p29. Section 5.3) The report states that assumptions derived from the GEIS on Animal Agriculture were made for livestock. Which assumptions are being referenced? Is the report referring to assumptions made about manure application methods?
Response: The assumptions used are shown in Table 5.3 for the entire livestock category, not just the manure application portion. For humans, pets, and wildlife, the assumptions are based on the population estimates. More information regarding the source of the estimates can be found in Sections 4.1, 4.3, and 4.4.

- (p31. Section 5.5) Table 5.5 is very informative. Can the target areas for fecal coliform reduction be further refined based on when the impairments are observed? For instance, recent data indicates that the impairments occur in August and September. Figure 2.5 shows that mean streamflow is lowest during these months. Wouldn't this suggest that pastures within 1000 ft. of waterways and inadequately treated wastewater would be sources of highest priority? If land application of manure was a primary source of the impairment via preferential flow mechanisms as stated on page 23, wouldn't the elevated concentrations be observed during months when a majority of the manure is applied and surface/subsurface flow is most prevalent? The studies cited suggest that the preferential flow pathways would result in a rapid transport of the bacteria. Furthermore, page 31 of the report states that the majority of bacterial loading to streams occurs during wet conditions; however, page 15 states that the highest fecal coliform bacteria concentrations are found in the summer and early fall. If the elevated concentrations observed in August and September are linked to the spring applications of manure due to the influence of

stream temperature, this highlights the need for further research into the relationship between manure management practices and the origin, fate, and transport of fecal coliform from agricultural systems.
Response: Yes, targeting the impairment will result in implementation dollars being spent appropriately. As shown in Table 5.5, the highest likely contributors of fecal coliform contamination during low flow periods was livestock within 1,000 feet of waterways and inadequately functioning septic systems. Low flow conditions were defined as periods when overland flow was not occurring. The majority of days (more than 90 percent) would be considered dry conditions. Thus, from a time perspective, applied manure is not considered a significant source of contamination during most of the year. However, during periods of overland runoff, based on volume of manure applied and delivery ratios, manure can be a significant source of bacterial contamination. Water quality data indicate that during wet periods, fecal coliform bacteria concentrations in the Rock River are an average of ten times higher than during dry conditions. It is possible that during runoff events river sediments are saturated with bacteria that may be expressed in the water during drier conditions.

There is significant seasonality of fecal coliform concentrations in the Rock River. While the highest concentrations of bacteria are observed during storm runoff, most samples were collected during dry conditions. The data indicate, as shown in Figure 3.9, fecal coliform bacteria concentrations rise throughout the summer when plotting non-storm event samples. Thus, on average, due to most of the data set being collected during dry conditions and the apparent relationship of temperature and bacterial concentration, the late summer months had the highest bacterial levels.

The extent of macropores as a transport mechanism of fecal coliform bacteria is not well understood in Minnesota. The Report references work conducted in Ohio that indicated macropores can be a pathway of bacteria to tile drainage. Macropores are listed in this report as one potential pathway, along with overland runoff and open tile intakes. The degree of significance of macropores is not speculated in the report, as additional studies are needed.

- (p39. Section 6.8) It may be helpful to construct a load duration curve to illustrate the data in Table 6.8. Including the water quality data would also assist in graphically representing when the exceedances occur.
Response: Thank you for the recommendation. A load duration curve will be added to the Report.

- (p59. Section 11.0) Implementation practices should be specified for fecal coliform verses turbidity to avoid confusion. Practices intended for both impairments should be specified. There are a number of Technical Service Providers (TSP) that can assist producers with developing and implementing manure management plans. The Clean Water Legacy Act requires that a TMDL include a range of cost estimates for implementation of the TMDL.

Response: The implementation strategies outlined in Section 11.0-Implementation Activities are simply possible options for BMPs that address one or both impairments. Information specifying the impairment has been added to the Report. A local Advisory Committee will be instrumental in determining future implementation activities that will address the impairments. Thank you for the information regarding the TSPs. There is definitely a need for these individuals in the implementation phase of these TMDL projects. Cost estimates were not included in the Report because the implementation plan development had not begun. It did not seem reasonable to include cost estimates when the BMPs that would be incorporated into the implementation plan were not defined.

- (p60. Section 11.4) The MDA has recently released a document on managing grazing in stream corridors that could also be referenced in this section: http://www.mda.state.mn.us/news/publications/animals/livestockproduction/grazing.pdf.
Response: Thank you for providing a link to this publication. It has been referenced in Section 11.4 and will be utilized in the implementation planning process.

Turbidity

- (p43. Section 8.2) What is the justification for using the "Duration Curve" approach for the three turbidity TMDLs in this instance?
Response: Justification for utilizing the duration curve approach is important and was not included in the Report. The following paragraph has been added to Section 8.2:

"There is a need to identify, evaluate, and select the type/method of analysis to be used in quantifying the source loads and allocations for TMDLs. The duration curve model was chosen for this project because of available data, watershed characteristics, minor urban influence, consultant experience and guidance and ease of application. Also, duration curves are well-tested, widely used, and acceptable to the EPA. The MPCA recommends using the simplest model that includes all the important processes affecting water quality as along as integrity is not compromised."

- (p45. Section 8.5) The report states that the watershed remains fairly uniform from headwaters to the monitoring station located at the Minnesota/Iowa border. Which variables are uniform? Is the report referring to land use?
Response: A visual assessment of the watershed from headwaters to the Minnesota/Iowa border reveals uniformity among climate, precipitation, land use, geology, soils, farming practices, human influence and disturbance. In review of GIS information, these factors correspond well with the visual assessment. The water quality data that was used in the Report and the data that was collected in 2007 shows similarities in results among sites sampled.

- (p48. Section 8.9) The Elk Creek Watershed is significantly smaller than the other impaired reaches. How appropriate is it to use the flow conversion factor in this instance? It seems monitoring data is needed to quantify both the flow and sediment contribution to the data observed at the Rock River on the Minnesota/Iowa border.

Response: Ideally, flow data would be available for all impaired reaches for the development of TMDL allocations. However, in situations when flow data is lacking, the MPCA recommends using flow conversion factors. The USGS also has established methodology for calculating flow in ungaged streams.

- (p53. Section 9) Turbidity Assessment for the Rock River Watershed: This section utilizes the flow data collected at Luverne and the water quality data collected from the Minnesota/Iowa monitoring station. How appropriate is it to apply this data to the Elk River Watershed? Statements made in this section regarding the magnitude, timing, and sources of TSS may not be appropriate for the Elk River Watershed given the differences in watershed size and other potential sources of sediment. For instance, figure 9.4 indicates that slope is not uniformly distributed throughout the watershed with steeper areas in the headwaters. How are the other variables related to sediment sources distributed throughout the watershed such as crop residue levels, geomorphology, and soil erodibility (k factor)? The report states that this section details the most recent ten-year period of TSS loading but the graphs indicate that the data represents 1995-2006.

Response: I am assuming your comment is referring to the Elk Creek subwatershed in my response. The information presented in Section 9.0-Turbidity Assessment for the Rock River Watershed encompasses the entire watershed. Elk Creek is a relatively small portion of the watershed (41,000 acres) and using best information available, knowledge from the Technical Committee, and similarity of results, the information was also applied to the Elk Creek watershed. Flow data is needed to calculate the allocations and the Rock River was unique that there were two USGS/DNR stream gages approximately 17 miles apart which were used for analyzing Elk Creek's contribution. Steeper slopes are located in the Elk Creek watershed but at a lesser degree. As mentioned above, the characteristics of Elk Creek are similar to the Rock River watershed. ArcMAP and a Revised Universal Soil Loss Equation calculation showed little to no difference in characteristics of the adjacent subwatersheds.

Figures 9.1, 9.2, 9.3a, 9.3b titles are misleading. The titles have been changed to show that water quality data used was collected from 1997-2006. The flow data used was from 1995-2006.

- (p54. Section 9.2) The reduction estimates for high flows are based on a very limited number of samples. The graph indicates that only 2 of the samples exceed the standard during the highest flows. Monitoring should be conducted to refine this estimate.

Response: Again, the Report utilized data that was available in the last ten years. There is ongoing monitoring in the watershed, which will aid in learning more about the complex TSS/turbidity relationship in the Rock River.

- (p54. Section 9.3) This is the first time the load reduction goal is stated (i.e. fewer than ten percent of samples may exceed 25 NTU). This needs to be presented more explicitly at the outset of the turbidity portion of the report. How will the standard be applied? Will this represent ten percent of the samples over the course of a year or flow regime?

Response: There are several places in the Report where water quality standards can be found. Page two of the Report contains the assessment criteria for both turbidity and fecal coliform bacteria and page 45 also discusses the water quality standards. As additional data is collected, an analysis of the data will indicate if the samples exceed the standard. The availability of a real-time gage site will be useful in collecting samples over a variety of flow regimes. Data used for assessment is reviewed in ten-year increments. Flow is not used as a factor.

- (p56. Section 9.3) The report states that overall, the major sources of excess turbidity in the Rock River during higher flows are streambank erosion and upland soil loss. The MPCA Turbidity TMDL Protocols suggest that projects should identify and evaluate factors contributing to streambank instability if streambank and channel contributions to turbidity are driving factors for elevated turbidity. Is an assessment of stream stability warranted in this instance to further refine the magnitude of sediment sources?

Response: Conducting a stream geomorphology assessment was beyond the scope and budget of this project. Such work, however, may still be appropriate in the implementation phase. The MPCA is working hard to identify appropriate geomorphic assessment methods for TMDL projects. Methods will be tested as part of a new Clean Water Legacy Act intensive watershed monitoring program where major watershed's physical, chemical, and biological conditions are assessed for all major watersheds in the state on a ten-year rotating cycle.

Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Jim Boerboom, MDA
Bob Patton, MDA
Becky Balk, MDA
Dan Stoddard, MDA
Adam Birr, MDA
Wayne Anderson, MPCA
Randall Hukriede, MPCA

To

MS KELLI DABERKOW
MCPA -
507-537-6001

From

LARRY FENICLE
507-777-4156

Ms. Daberkow

Please accept and file this as my testimony on the Rock River Watershed issue

Thanks You
Larry Fenicle

1442 111th St.
Woodstock, MN 56186
January 30, 2008

Ms. Kelli Daberkow
MCPA
1420 East College Drive
Suite 900
Marshall, MN 56258

Re: Public Comment on TDML Report

To Whom It May Concern:

I have lived on my present farm in section 6 of Burke Township for the past 32 years and have seen flooding and water flow increase three-fold during this time. This problem has been caused by the agencies that handed out money and allowed the straightening, tiling, and draining of the watershed with no regard to water flow damage and no retention measures taken to keep the water flow at the previous levels. Now these same agencies are planning to hand out more money to take care of problems created by their previous oversights.

Also there are other pollution problems on the Rock River that have not been mentioned in the statements from your group in the impact studies.

1. The Holland Waste Water Treatment Plant at the head of the Rock River which I am aware of having overflowed with the water arriving on my farm five miles away within a few hours.

2. The closed Pipestone County Landfill which lies on the east bank of the Rock River in Section 31 of Pipestone County. It is common knowledge and has even been admitted to me by personnel at Minnesota Pollution Control that there are things buried in that landfill which shouldn't have been while at the same time they maintain that there is nothing leaking out of the landfill. However, their reports indicate there are toxic substances leaking into the ground water test wells located between the landfill and the Rock River. Some of these are exceeding the health risk limits set by the MN Dept of Health with no action being taken to clean up the contamination.

3. Contamination by hog confinement unit drainage and spreading of hog manure in the Rock River flood plane.

It is ironic to me that since 1993 and the closure of the Pipestone County Landfill, I have experienced increasing health problems and death loss in my cattle herd to the extent that we cannot stay in business any longer. We have also had hog pathogens isolated in our sick cattle during the past year which leads us to believe that the river is being polluted by these hog confinement units.

It would appear to me that the cow standing in the Rock River, in the picture used in your brochure, is in more danger from the Rock River than the Rock River is by pollution from her.

It is common knowledge that for centuries animals have roamed and used the river at their discretion with no damage to the eco-system until man intervened and started managing them.

I realize I have been critical of past management and the agencies involved here. However, I believe the solution and what should have been done long ago, but still can be done now, is to form a watershed district which has been done on many other waters. This watershed district would oversee, develop, and implement water retention, water flow, and pollution issues on the Rock River.

Sincerely,

Larry Penicle

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Larry Fenicle
1442 - 111th Street
Woodstock, MN 56186

Dear Mr. Fenicle:

Thank you for your comments in the January 30, 2008 letter on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. The MPCA appreciates that you took the time to provide comments on the project. The responses to your comments are provided below in italics.

I have lived in my present farm in section 6 of Burke Township for the past 32 years and have seen flooding and water flow increase three-fold during this time. This problem has been caused by the agencies that handed out money and allowed the straightening, tiling and draining of the watershed with no regard to water flow damage and no retention measures taken to keep the water flow at previous levels. Now these same agencies are planning to hand out more money to take care of problems created by their previous oversights.

Response: Research shows that the amount of water entering lakes and streams has remained constant, but the rate which water is getting to these water bodies has increased due to human activities such as tiling, development of drainage ditches, addition of impervious surfaces, and removal of wetlands. The agencies involved in the implementation plan are for oversight and technical guidance. The implementation plan that will be developed will be drafted and created by individuals that live in the Rock River watershed. These individuals will have the ability to design a plan that meets the needs of landowners, operators, farmers, homeowners, and all other stakeholders in the watershed as well as reducing the fecal coliform and turbidity in the Rock River.

Also there are other pollution problems in the Rock River that have not been mentioned in the statements from your group in the impact studies:

1. The Holland Waste Water Treatment Plant at the head of the Rock River which I am aware of having overflowed with the water arriving on my farm five miles away within a few hours.

Response: The Holland Wastewater Treatment Facility (WWTF) has a National Pollutant Discharge Elimination System/State Disposal System permit that dictates effluent limits and discharge amounts. According to MPCA records, the Holland WWTF has not had a reported bypass in the last five years. The facility is designed to have a continuous discharge to the Rock River. This is legal and necessary to properly maintain the facility. Wastewater samples are collected monthly and reported to the MPCA. The water discharged needs to be equal or exceed the quality of the Rock River.

2. The closed Pipestone County Landfill which lies on the east bank of the Rock River in Section 31 of Pipestone County. It is common knowledge, and has even been admitted to me by personnel at Minnesota Pollution Control Agency, that there are things buried in that landfill which shouldn't have been, while at the same time they maintain that there is nothing leaking out of the landfill. However, their reports

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indicate that there are toxic substances leading into the groundwater test wells located beneath the landfill and the Rock River. Some of these are exceeding the health risk limits set by the MN Dept of Health with no action being taken to clean up the contamination.

Response: Although groundwater contamination is important, the goal of the Report was to address the fecal coliform and turbidity impairments in the Rock River. There has been and continues to be monitoring efforts near the Pipestone County Landfill. Water sampling has been conducted three times a year for the past 17 years. There are presently 12 monitoring wells sampled, as well as the Rock River at the upstream point and downstream points where it passes on the west side of the landfill, and the drainage ditch where it exits the landfill property on the west side. The samples are analyzed for volatile organic compounds (VOCs) in the spring, summer, and fall, and metals and inorganic compounds in the summer. The last time there was an exceedance of the Health Risk Limits (HRLs) for one of the VOCs was in 1994. There have been trace amounts detected since then but infrequently in the past 10 years. Arsenic was detected in one of the monitoring wells on the west side of the north fill area that was above the HRL, but in 2007, the sample was within the HRL. Because of these detections, MPCA collected samples from another monitoring well further west that had not been regularly sampled in the past. These two samples also showed arsenic present. However, because this well had not been sampled in years, it is hard to say if these are representative results or if there is sediment in the bottom of the well that is skewing the results. The Rock River samples do not show impacts from the landfill and the downstream samples are usually lower in metal concentrations than the upstream samples.

It is probably true that this landfill collected items that would not be allowed today. This was fairly common among many of the other landfills in the state. The MPCA's standard remedy is to install a cap over the landfill to keep precipitation from percolating through the waste and leaching out contaminants that may be present. The gas vents also improve the water because the VOCs will escape with the methane gas and not move down into the water table. It usually takes a few years after the cap is installed to see the full effects on the ground water. Given the low levels of metals and lack of VOCs in the water, it appears to be working.

3. Contamination by hog confinement unit drainage and spreading of hog manure in the Rock River flood plane.

Response: According to MPCA feedlot staff, most of the hog confinement units have measures in place to monitor confinement pit leaks. This includes a physical assessment that the permitted facilities are required to report annually. Manure application is a concern for the Rock River due to the amount of fecal coliform produced by livestock. This most likely will be addressed in the implementation plan process that is mentioned above.

It is ironic to me since 1993 and the closure of the Pipestone County Landfill, I have experienced increasing health problems and death loss in my cattle herd to the extent that we cannot stay in business any longer. We have also had hog pathogens isolated in our sick cattle during the past year which leads us to believe that the river is being polluted by these hog confinement units.

It would appear to me that the cow standing in the Rock River, in the picture used in your brochure, is in more danger from the Rock River than the Rock River is by pollution from her.

It is common knowledge that for centuries animals have roamed and used the river at their discretion with no damage to the ecosystem until man intervened and started managing them.

Response: I am sorry to hear of your loss and closure of your business. Your information regarding pathogens causing sick cattle reiterates the importance of this TMDL. For the Rock River, the water quality standard relates to human health risk through the aquatic recreation designated use. However, attainment of this standard would also improve conditions for livestock uses. Relative to your comment on hog manure, bacteria source tracking has been done in some TMDL projects across the United States. This technique is time consuming and expensive and was not applied in the Rock River. Research continues, however, and such techniques may eventually be applied in water monitoring throughout Minnesota to help more specifically identify sources of contamination.

I realize I have been critical of past management and the agencies involved here. However, I believe the solution and what should have been done long ago, but still can be done now, is to form a watershed district which has been done on many other waters. This watershed district would oversee, develop and implement water retention, water flow, and pollution issues in the Rock River.

Response: You are correct. A watershed district can be formed to address water quality and pollution issues. Watershed districts are formed at the request of local citizens, county boards, or cities by petitioning the Minnesota Board of Water and Soil Resources (BWSR) under the procedures set forth in the Watershed Act. Please contact BWSR for more information. It may be of interest to you that legislation is being considered at the state level to expand watershed district coverage. You may wish to contact your local legislators.

Again, thank you for commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

Minnesota Soybean Growers Association

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January 31, 2008

Ms. Kelli Daberkow
Minnesota Pollution Control Agency
1420 East College, Suite 900
Marshall, MN 56258

RE: Comments on the Fecal Coliform and Turbidity TMDL Assessment for Rock River.

Dear Ms. Daberkow,

The Minnesota Soybean Growers Association (MSGA) appreciates the opportunity to comment on the draft Fecal Coliform and Turbidity TMDL report. MSGA farmer leadership and staff have reviewed the report and attended an informational meeting held at Luverne, MN on January 24, 2008. MSGA is very concerned that the Rock River TMDL, and others that are following a similar model, are neither in line with the intent nor the spirit of the 2006 Clean Water Legacy Act (MN Statutes Chapter114D). MSGA has listed below a number of comments regarding the Rock River Fecal Coliform and Turbidity draft report, as well as our concerns regarding the process that was used in developing this TMDL. MSGA feels that all of the concerns raised are significant, and the order in which they are presented, should not be viewed as relative to their importance.

Stakeholder Involvement: MSGA is concerned that the Rock River TMDL process did not involve agricultural stakeholders to the extent indicated by the MN Clean Water Legacy Act - **MN Statutes Chapter114D.35 Subdivision 1 Public and stakeholder participation -** *Public agencies and private entities involved in the implementation of this chapter shall encourage participation by the public and stakeholders, including local citizens, landowners and managers, and public and private organizations, in the identification of impaired waters, in developing TMDL's and in planning, priority setting, and implementing restoration of impaired waters. In particular, the Pollution Control Agency shall make reasonable efforts to provide timely information to the public and to stakeholders about impaired waters that have been identified by the agency. The agency shall seek broad and early public and stakeholder participation in scoping the activities necessary to develop a TMDL, including the scientific models, methods, and approaches to be used in TMDL development, and to implement restoration pursuant to section 114D.15, subdivision 7.*

Active farmers in the watershed do not believe the groups involved with the TMDL process adequately represented agricultural stakeholders. Active farmers, general farm and commodity organizations and agricultural professionals are in the best position to represent agriculture as stakeholders. Involvement of agricultural stakeholders early in the process would probably have allowed for many of MSGA's other concerns to be addressed in the TMDL study.

Natural Background Levels: The draft TMDL failed to quantify and distinguish non-point source and natural background in the TMDL study for either Fecal Coliform or Turbidity. The Federal Clean Water Act provides a mechanism for accounting for natural background levels of a pollutant in the TMDL process. The MN Clean Water Legacy Act (**MN Statutes Chapter114D.15 Subdivision 10 Total maximum daily load or TMDL.**) defines 'natural background' and **requires** that an allocation for natural background levels be made. *"Total maximum daily load" or "TMDL" means a scientific study that contains a calculation of the*

maximum amount of a pollutant that may be introduced into a surface water and still ensure that applicable water quality standards for that water are restored and maintained. A TMDL also is the sum of the pollutant load allocations for all sources of the pollutant, including a wasteload allocation for point sources, a load allocation for nonpoint sources and natural background, an allocation for future growth of point and nonpoint sources, and a margin of safety to account for uncertainty about the relationship between pollutant loads and the quality of the receiving surface water. "Natural background" means characteristics of the water body resulting from the multiplicity of factors in nature, including climate and ecosystem dynamics, that affect the physical, chemical, or biological conditions in a water body, but does not include measurable and distinguishable pollution that is attributable to human activity or influence. A TMDL must take into account seasonal variations.

The Fecal Coliform and Turbidity loadings in the Rock River, which are beyond the "point source" wasteload contributions, should be classified as natural background. The TMDL study did not provide scientific evidence to indicate otherwise. If the natural background loadings are the cause for exceeding the Water Quality Standards, then the Standards or the Designated Use should be re-evaluated. It is not uncommon for natural background loadings to exceed Water Quality Standards. A study in Nebraska during the late 1970's (J. W. Doran, USDA 1979, attached) determined that more bacterial runoff occurred from an ungrazed control area than from pastureland. However, in both cases, runoff concentrations were substantially higher than water quality standards.

Lack of Quantity and Quality of Data: MSGA is concerned over the quantity and quality of the data that went into the determination of impairment for Fecal Coliform and Turbidity of the Rock River; and believes it should not have been listed as impaired for Fecal Coliform and Turbidity based on the limited amount of monitoring data that was available. There were only a total of 42 samples from one site, taken over a ten year period, which were analyzed for Fecal Coliform. This is an inadequate data set for making an impairment determination. The total Rock River Watershed is over 355,000 acres. MSGA believes it is neither scientifically valid nor appropriate to try to draw conclusions about source and seasonality of Fecal Coliform problems from this limited data set.

MSGA questions the validity of using a Transparency Tube for establishing turbidity impairments. Minnesota Water Quality Standards have not been established for a Transparency Tube. In addition, the data from the one site that has TSS and Turbidity (NTU) data is limited and not adequate for determination of impairment. MSGA also believes it is neither scientifically valid nor appropriate to draw conclusions about source and seasonality of Turbidity problems from this limited data set.

Fecal Coliform Linkage to Livestock: The draft Rock River Fecal Coliform TMDL determined that land application of manure was a primary source of loadings of the Rock River. This was done without scientific evidence supporting a linkage between land application of manure and fecal coliform levels that exceed standards. A study sited in the Blue Earth River Basin Fecal Coliform study by *Gerba et al. (1975)* reported survival times of fecal-associated bacteria in soils range from 2 to 4 months. Most manure in the Rock River watershed is applied in the fall, while; fecal counts peaked and exceeded standards in August and September, under the lowest flow conditions. In order for manure application to be the source of the summer bacteria levels, a survival time that is twice that which have been documented would need to occur. In addition, there would need to be a viable transport mechanism. No logical or documented transport mechanism was presented in the TMDL study.

Recent studies, some at the U of Minnesota (Michael J. Sadowsky, et al.), have identified E. Coli populations that naturally occur and multiply in surface waters. It is possible that the higher Fecal Coliform counts in August and September are simply naturally occurring populations which are multiplying under favorable environmental conditions.

The draft Rock River Fecal Coliform TMDL made several assumptions (**which were not validated**) in an effort to draw a conclusion that land application of manure is responsible for summertime violations of fecal

coliform standards. In our society today, being called a polluter has very negative connotations and implications. It is neither fair nor ethical to label livestock producers in the Rock River Watershed as polluters without substantial evidence to support those claims. **This conclusion should be removed from the TMDL report until valid scientific studies can determine otherwise.**

Account for Wildlife contributions: MSGA believes that the TMDL study did not adequately account for wildlife contributions to the high Fecal Coliform levels in the summertime. It would seem logical that wildlife could be a primary source of summertime spikes in Fecal Coliform bacteria levels. Wildlife is increasing due to increasing wildlife habitat as a result of conservation programs that encourage buffer strips along rivers, streams and drainage ditches. In addition, there is significant CRP, CREP and WRP acres in the watershed. Wildlife will tend to concentrate in areas where there is habitat and water during the summertime, when other sources of water dry up.

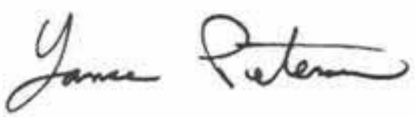
Wildlife in close proximity to water, during the summer months, is likely to increase the delivery ratio of wildlife sourced fecal bacteria dramatically. In addition to a much higher delivery ratio, there are many more species in the watershed than was sited in the draft TMDL report. **MSGA recommends development and use of DNA Finger Printing technologies to determine the actual source of summertime spikes in Fecal Coliform counts.** DNA Fingerprinting would help to quantify the levels of Fecal Coliform coming from wildlife, non-compliant septic systems and naturally occurring populations.

Water Quality Standards: Fecal Coliform or E Coli water quality standards need to be re-evaluated. Fecal Coliform and E Coli are surrogate tests for the presence of various other potential pathogenic organisms. Those pathogens may or may not be present when Fecal Coliform or E Coli are detected above standard levels. It would be more appropriate to develop standards for the individual pathogens of concern. This would help to focus resources on real problems and ensure that unnecessary costs are avoided.

Conclusion:
In summary, MSGA is concerned about the failure to follow the appropriate protocol, established by the MN Clean Water Legacy Act, in the Rock River Fecal Coliform and Turbidity TMDL study. This includes the failure to involve agricultural stakeholders in all parts of the TMDL process; the development of TMDL load allocations which did not properly account for natural background loadings; and, conclusions regarding the source of loadings which were not scientifically justified. In addition, MSGA believes the quantity and quality of monitoring data did not justify the initial listing for Fecal Coliform and Turbidity impairment.

The Minnesota Soybean Growers Association appreciates the opportunity to provide comments on the Draft Rock River Fecal Coliform and Turbidity TMDL report. If you have any questions, please contact me or the Minnesota Soybean office.

Sincerely,



Lance Peterson, President
Minnesota Soybean Growers Association
218-826-6759 (home)
218-731-1656 (cell)

CHEMICAL AND BACTERIOLOGICAL QUALITY OF RUNOFF FROM GRAZING LAND

J. W. Doran, J. S. Schepers, and N. P. Swanson
(USDA-SEA-AR)

Objective:

The environmental impact of runoff from agricultural lands is ill-defined and is one of the most difficult problems to study due to the diversity of nonpoint source pollution. An estimated one-third of the water pollutants in the United States comes from such nonpoint sources. Animal wastes are often cited as a major source of pollution since over one-third of the land area in the Continental United States is used for grazing livestock. These same lands receive an estimated 50% of all livestock wastes (USDA Agricultural Statistics, 1977). The impact of livestock-grazing operations on the quality of runoff waters depends on many management and climatological factors, and thus is not well defined. The objective of this study was to evaluate the impact of a seasonal cow-calf grazing operation in south central Nebraska on the chemical and bacteriological quality of rainfall runoff water.

Procedures:

Runoff was collected, either automatically or manually, from a 40-ha cow-calf pasture located at the Roman L. Hruska U. S. Meat Animal Research Center near Clay Center in south central Nebraska. Since the 1940s, the watershed has been planted to a combination of warm- and cool-season grasses and was instrumented in 1975. The average annual precipitation for the area is 66 cm. Animal stocking rate (45 to 55 cow-calf pairs) and management practices were typical of a controlled-grazing system. Fertilizer was applied each spring at 67 kg N/ha as ammonium nitrate. A small, fenced, ungrazed area of 0.11 ha was used to represent an ungrazed pasture. The control area was clipped periodically to maintain vegetative cover similar to the main pasture area. The principal soil types are Crete (Pachic Argiustolls) and Hastings (Udic Argiustolls) silt loams. Most of the watershed ranges in slope from 0 to 3%. Small areas adjacent to the grassed drainageway range in slope from 3 to 11%.

Results and Discussion:

Little runoff occurred in 1976 because the previous 2 years were relatively dry, and the rainfalls were numerous but small in intensity and amount. However, 1977 was a very wet year with several high-intensity rainfall events. Most of the runoff from the pasture area occurred during 1977.

Only Page 1 of report was included.

Minnesota Pollution Control Agency
Marshall Office

March 4, 2008

Mr. Lance Peterson, President
Minnesota Soybean Growers Association
151 Saint Andrews Court, Suite 710
Mankato, MN 56001

Dear Mr. Peterson:

Thank you for your comments in the January 31, 2008, letter on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment (Report)*. The MPCA appreciates that your organization took the time to review the draft document and attend the public meetings held on January 24, 2008. The responses to your comments are provided below.

Stakeholder Involvement: MSGA is concerned that the Rock River TMDL process did not involve agricultural stakeholders to the extent indicated by the MN Clean Water Legacy Act - **MN Statutes Chapter114D.35 Subdivision 1 Public and stakeholder participation -** *Public agencies and private entities involved in the implementation of this chapter shall encourage participation by the public and stakeholders, including local citizens, landowners and managers, and public and private organizations, in the identification of impaired waters, in developing TMDL's and in planning, priority setting, and implementing restoration of impaired waters. In particular, the Pollution Control Agency shall make reasonable efforts to provide timely information to the public and to stakeholders about impaired waters that have been identified by the agency. The agency shall seek broad and early public and stakeholder participation in scoping the activities necessary to develop a TMDL, including the scientific models, methods, and approaches to be used in TMDL development, and to implement restoration pursuant to section 114D.15, subdivision 7.*

Active farmers in the watershed do not believe the groups involved with the TMDL process adequately represented agricultural stakeholders. Active farmers, general farm and commodity organizations and agricultural professionals are in the best position to represent agriculture as stakeholders. Involvement of agricultural stakeholders early in the process would probably have allowed for many of MSGA's other concerns to be addressed in the TMDL study.

Response: *Minn. Statutes Chapter114D.35 Subdivision 1 contains several opportunities for the public to be involved with TMDL studies. The Rock River TMDL project, from the beginning, has made several attempts to involve the public through information and education. Section 13 - Public Participation of the Report outlines the activities and publications which the Technical Committee committed time and resources, in order to provide the public with information. In each of these public education activities, contact information was available for those needing*

150 YEARS of STATEHOOD

more information. Some specific examples include a public meeting at the beginning of the TMDL to inform interested individuals, articles in the Worthington Daily Globe and the Rock County Star Herald newspapers, several newsletter articles providing updates, and a project website. The MPCA was also in direct contact with the Minnesota Department of Agriculture to assist with informing stakeholders.

A process has been developed to guide the upcoming task of creating an implementation plan. The foundation of the implementation plan is to have buy-in from stakeholders in the Rock River watershed. Personalized letters requesting input and assistance were sent to agricultural groups, targeted individuals, and environmental groups in January 2008. In addition, at the public meetings held on January 24, 2008, input and sign-up of interested individuals to serve on an Advisory Committee was requested. There were several individuals, mostly farmers that agreed to serve on the committee.

Many of the members on the Technical Committee not only work for a local governmental agency or entity but also are landowners, livestock producers and homeowners that live in the Rock River watershed. They are aware of the issues in watershed from a standpoint of conservation and also as a resident. The Technical Committee is asking for assistance in developing the implementation plan to bring forward new ideas and input to develop a strong plan that represents all stakeholders.

Natural Background Levels: The draft TMDL failed to quantify and distinguish non-point source and natural background in the TMDL study for either Fecal Coliform or Turbidity. The Federal Clean Water Act provides a mechanism for accounting for natural background levels of a pollutant in the TMDL process. The MN Clean Water Legacy Act (**MN Statutes Chapter114D.15 Subdivision 10 Total maximum daily load or TMDL**) defines 'natural background' and **requires** that an allocation for natural background levels be made. *"Total maximum daily load" or "TMDL" means a scientific study that contains a calculation of the maximum amount of a pollutant that may be introduced into a surface water and still ensure that applicable water quality standards for that water are restored and maintained. A TMDL also is the sum of the pollutant load allocations for all sources of the pollutant, including a wasteload allocation for point sources, a load allocation for nonpoint sources and natural background, an allocation for future growth of point and nonpoint sources, and a margin of safety to account for uncertainty about the relationship between pollutant loads and the quality of the receiving surface water. "Natural background" means characteristics of the water body resulting from the multiplicity of factors in nature, including climate and ecosystem dynamics, that affect the physical, chemical, or biological conditions in a water body, but does not include measurable and distinguishable pollution that is attributable to human activity or influence. A TMDL must take into account seasonal variations.*

The Fecal Coliform and Turbidity loadings in the Rock River, which are beyond the "point source" wasteload contributions, should be classified as natural background. The TMDL study did not provide scientific evidence to indicate otherwise. If the natural background loadings are

the cause for exceeding the Water Quality Standards, then the Standards or the Designated Use should be re-evaluated. It is not uncommon for natural background loadings to exceed Water Quality Standards. A study in Nebraska during the late 1970's (J. W. Doran, USDA 1979, attached) determined that more bacterial runoff occurred from an ungrazed control area than from pastureland. However, in both cases, runoff concentrations were substantially higher than water quality standards.

Response: *Ultimately, the Report needs to be approved by the EPA. The EPA's requirements state: "EPA regulations require that a TMDL include load allocations, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonable accurate estimates to gross allotments. Where possible, load allocations should be described separately for natural background and nonpoint sources". For the Rock River TMDL, there was limited data available for documenting nonpoint sources versus natural background and therefore the load allocations were compiled into one gross allotment. It should also be noted that separating sources such as livestock, wildlife, and sewage discharge would put an amount (i.e. limit) that can be used for limiting the activities in the watershed such as feedlot expansion. The TMDL equation is the sum of allocations from wasteload and load, margin of safety and reserve capacity. The Report will present the allocations as recommended by and approved by EPA.*

We do not anticipate a change in the bacterial water quality standards based on our current understanding of natural background conditions. This is because the water quality standards for aquatic recreation are based on human health risk to exposure of pathogens. There are discussions of adopting a Tiered Aquatic Life Uses (TALU) framework in which biological and physical data is used to assess the aquatic life use of Minnesota's streams. It is unknown at this point, how and if this would affect the Rock River. A TALU adoption plan is currently being developed and stakeholder meetings are planned for later this year. This system would seem to allow for consideration of natural background conditions.

The report you mentioned indicates higher bacteria levels in the control but there are many unknowns, such as previous land use of the control, control location in the pasture, and potential contamination from overland runoff of the grazed pasture. This study would be more useful if some of these factors were known.

Lack of Quantity and Quality of Data: MSGA is concerned over the quantity and quality of the data that went into the determination of impairment for Fecal Coliform and Turbidity of the Rock River; and believes it should not have been listed as impaired for Fecal Coliform and Turbidity based on the limited amount of monitoring data that was available. There were only a total of 42 samples from one site, taken over a ten year period, which were analyzed for Fecal Coliform. This is an inadequate data set for making an impairment determination. The total Rock River Watershed is over 355,000 acres. MSGA believes it is neither scientifically valid nor appropriate to try to draw conclusions about source and seasonality of Fecal Coliform problems from this limited data set.

MSGA questions the validity of using a Transparency Tube for establishing turbidity impairments. Minnesota Water Quality Standards have not been established for a Transparency Tube. In addition, the data from the one site that has TSS and Turbidity (NTU) data is limited and not adequate for determination of impairment. MSGA also believes it is neither scientifically valid nor appropriate to draw conclusions about source and seasonality of Turbidity problems from this limited data set.

Response: *It is the responsibility of the MPCA to monitor Minnesota's rivers and lakes, to assess water quality, and to report the results to the public. The MPCA has established guidelines and criteria to assess Minnesota's waters for several water quality parameters. It serves to guide the interpretation and application of current water quality standards. This guidance can be found at http://www.pca.state.mn.us/publications/wq-iw1-04.pdf.*

The Rock River and Elk Creek were listed because the data indicated impairments to its designated uses. Additional monitoring conducted in 2007 shows that impairments still exist. The Report summarized and used the most recent data available. Regarding the comment on the use of transparency tube data, the MPCA has conducted analysis showing a strong relationship between transparency and turbidity. In addition, waters are not listed based exclusively on transparency data unless there is corroboration from a local or state water resource manager. If there are concerns regarding assessment procedures, please contact Louise Hotka, MPCA, 651-296-7223 for further information.

Fecal Coliform Linkage to Livestock: The draft Rock River Fecal Coliform TMDL determined that land application of manure was a primary source of loadings of the Rock River. This was done without scientific evidence supporting a linkage between land application of manure and fecal coliform levels that exceed standards. A study sited in the Blue Earth River Basin Fecal Coliform study by *Gerba et al. (1975)* reported survival times of fecal-associated bacteria in soils range from 2 to 4 months. Most manure in the Rock River watershed is applied in the fall, while; fecal counts peaked and exceeded standards in August and September, under the lowest flow conditions. In order for manure application to be the source of the summer bacteria levels, a survival time that is twice that which have been documented would need to occur. In addition, there would need to be a viable transport mechanism. No logical or documented transport mechanism was presented in the TMDL study.

Recent studies, some at the U of Minnesota (Michael J. Sadowsky, et al.), have identified E. Coli populations that naturally occur and multiply in surface waters. It is possible that the higher Fecal Coliform counts in August and September are simply naturally occurring populations which are multiplying under favorable environmental conditions.

The draft Rock River Fecal Coliform TMDL made several assumptions **(which were not validated)** in an effort to draw a conclusion that land application of manure is responsible for summertime violations of fecal coliform standards. In our society today, being called a polluter

has very negative connotations and implications. It is neither fair nor ethical to label livestock producers in the Rock River Watershed as polluters without substantial evidence to support those claims. **This conclusion should be removed from the TMDL report until valid scientific studies can determine otherwise.**

Response: *It was not indicated in the Report that manure application was the primary source of fecal coliform contamination nor did it label livestock producers as polluters. Improper manure application is a potential source along with wildlife, pets, and illegal septic discharge. The research and methods used are referenced in the Report and have also been used in other EPA-approved TMDLs.*

As shown in Table 5.5, the likely highest contributors of fecal coliform contamination during low flow periods are livestock within 1,000 feet of waterways and inadequately functioning septic systems. Low flow conditions were defined as periods when overland flow was not occurring. The majority of days (more than 90 percent) would be considered dry conditions. Thus, from a time perspective, applied manure is not considered a significant source of contamination during most of the year. However, during periods of overland runoff, based on volume of manure applied and delivery ratios, manure can be a significant source of bacterial contamination. Water quality data indicate that during wet periods, fecal coliform bacteria concentrations in the Rock River are an average of ten times higher than during dry conditions.

There is a significant seasonality of fecal coliform concentrations in the Rock River. While the highest concentrations of bacteria are observed during storm runoff, most samples were collected during dry conditions. The data indicate, as shown in Figure 3.9, fecal coliform bacteria concentrations rise throughout the summer when plotting non-storm event samples. Thus, on average, due to most of the data set being collected during dry conditions and the apparent relationship of temperature and bacterial concentration, the late summer months had the highest bacterial levels.

It is correct that bacteria under certain conditions can multiply/reproduce. It is unknown at this time the extent to which this is occurring in the Rock River. Ongoing research across Minnesota and the United States can hopefully provide some answers in the future.

Account for Wildlife contributions: MSGA believes that the TMDL study did not adequately account for wildlife contributions to the high Fecal Coliform levels in the summertime. It would seem logical that wildlife could be a primary source of summertime spikes in Fecal Coliform bacteria levels. Wildlife is increasing due to increasing wildlife habitat as a result of conservation programs that encourage buffer strips along rivers, streams and drainage ditches. In addition, there is significant CRP, CREP and WRP acres in the watershed. Wildlife will tend to concentrate in areas where there is habitat and water during the summertime when other sources of water dry up.

Wildlife in close proximity to water, during the summer months, is likely to increase the delivery ratio of wildlife sourced fecal bacteria dramatically. In addition to a much higher delivery ratio, there are many more species in the watershed than was sited in the draft TMDL report. **MSGA recommends development and use of DNA Fingerprinting technologies to determine the actual source of summertime spikes in Fecal Coliform counts.** DNA Fingerprinting would help to quantify the levels of Fecal Coliform coming from wildlife, non-compliant septic systems and naturally occurring populations.

Response: *The Report utilized the best data and information available. While most wildlife spends time adjacent to, or in the water, the amount of bacteria produced compared to livestock is less. As shown in Table 5.4, there is an estimated delivery ratio of four percent for wildlife which is the second highest percentage shown. The Report did account for wildlife other than deer, turkeys, pheasants and geese by using the same amount of contribution as the deer population.*

There has been and continues to be research in Minnesota and throughout the country regarding the sources, movement, and survival of bacteria in watersheds. DNA fingerprinting may prove to be important to the understanding of fecal coliform bacteria and research is needed to gain this information. This technology can be very time consuming and expensive but there are studies across the United States where DNA fingerprinting has been used for TMDLs. Currently in Minnesota, the Minnesota Department of Agriculture and several partners are conducting a project where this technology is used. As results become available, they can be applied to the Rock River through adaptive management principles. We generally prefer our local projects, with their limited resources, to focus on implementation efforts rather than research, although some investigative-type monitoring may be appropriate.

Water Quality Standards: Fecal Coliform or E. Coli water quality standards need to be re-evaluated. Fecal Coliform and E. Coli are surrogate tests for the presence of various other potential pathogenic organisms. Those pathogens may or may not be present when Fecal Coliform or E. Coli are detected above standard levels. It would be more appropriate to develop standards for the individual pathogens of concern. This would help to focus resources on real problems and ensure that unnecessary costs are avoided.

Response: *Thank you for your concerns regarding the water quality standards. Water quality standards are fundamental tools that help protect Minnesota's abundant and valuable surface and ground water resources. According to the EPA's Protocol for Developing Pathogen TMDLs (January 2001), pathogenic organisms are generally difficult to identify and to isolate as well as being highly varied in characteristic and type. Fecal Coliform and E. coli are used as indicator organisms since they are more easily measured and sampled and are associated with pathogens that are transmitted by fecal contamination. If you have concerns regarding water quality standards, please contact Mark Tomasek, MPCA, 651-296-7241 for further information.*

Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html

Sincerely,

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA

BEEF USA

Rock - Nobles Cattlemen's Association

805 141st Street • Luverne, MN 56156

January 21, 2008

Kelli Daberkow
Minnesota Pollution Control Agency
1420 East College Drive, Suite 900
Marshall, MN 56258

Dear Ms. Daberkow,

The Rock-Nobles Cattleman's Association appreciates the opportunity to comment on the Draft Rock River Fecal Coliform and Turbidity Total Maximum Daily Load (TMDL) Report. The Rock-Nobles Cattleman's Association (RNCA) represents the interests of over 60 livestock and crop producers in the Rock River Watershed. The RNCA believes that agriculture is an integral part of the economic viability of the communities in the Rock River Watershed. RNCA also believes that it is imperative for the MPCA to work with individual producers, agri-businesses, producer organizations and community groups in implementing measures of the TMDL report. Agricultural stakeholders represent the largest contingent of stakeholders in the region and need to be an important part of the effort in developing and approving the future implementation plan for the Rock River fecal coliform and turbidity TMDL.

The RNCA would like the MPCA to consider the following points and incorporate them into the final draft of this TMDL report:

1. **Seasonal Variation of Fecal Coliform Concentrations:** The RNCA would like to address the seasonal variation of fecal coliform levels in the Rock River. The report stated that "typically the highest bacterial concentrations are found in the summer and early fall. In the spring, concentrations are typically lower, despite the fact that significant manure application occurs during the time and that fields have little crop canopy to protect against water erosion." In fact, most manure applications from swine feedlots occur in October and November and most manure applications from cattle feedlots occur from October through March. The timing of most manure applications seems to contradict the notion that fecal coliform from manure applications are being delivered to waterways. Studies cited in this report that were conducted by Giles Randall at the University of Minnesota Southern Experiment Station in Waseca imply that the winter environment of Minnesota is a probable killer of fecal coliform in the soil due to manure applications. Other studies by Gerba et. al (1975) indicates that survival times of fecal-associated bacteria in soils range from 2-4 months. In addition, it seems logical that the increased flow of the water column in the stream during the months of April, May and June would *inhibit* the deposition of bacterial coliform in the stream bed. If fecal coliform is persisting in the soil of the field or the sediment in the stream bed from manure applications, more research needs to be done on the 'lag time' of when fecal coliform is applied to the soil in the form of manure and when it shows up in the stream. We understand that livestock produce the vast majority of fecal coliform in the watershed. However, we believe more consideration needs to be given to timing and method of the

manure applications as well as the transport mechanism that delivers fecal coliform to the stream.

2. **Wildlife and Noncompliant Septic Systems:** A great deal of time was spent talking about the high contributions of fecal coliform attributable to animal agriculture. This assumption is based purely on volume and was not actually verified by any part of the study. Certainly, the majority of fecal coliform in the watershed is produced for livestock. However, it may be that noncompliant septic systems and wildlife are higher contributors of fecal coliform than estimated in this report, particularly during the low flow periods when the fecal coliform concentrations are the highest. It is vitally important to have accurate delivery ratios when estimating the contributions of fecal coliform from any given source. We believe that the data in the report indicate wildlife and noncompliant septic systems are the primary contributors of fecal coliform in the summer months. Low flow periods are providing less dilution. The relatively small volumes of fecal coliform generated by non-compliant septic systems and wildlife (in comparison to that in livestock manure storage areas) will make a greater impact on the concentration of fecal coliform during these times. These are the sources actively contributing to the impaired reaches of the stream during the months that exceeded the water quality standard. It is more logical to look at actively discharging sources at the periods when the water quality standard is exceeded, rather than a focusing on an unknown and unproven 'lag time' of fecal coliform persisting in the soil. Focusing on 'lag times' only implies that land application of manure is the main culprit. Funding dollars should look for practical, cost-effective solutions rather than chasing a rabbit down a hole. In today's world, being called a polluter carries extremely negative consequences. It is unfair to label livestock producers polluters without substantiated evidence to backup the claim.

3. **Background Levels of Fecal Coliform:** The RNCA recognizes that more research needs to be completed in determining what levels of fecal coliform exist in undisturbed prairie ecosystems. We realize that there is some difficulty in getting baseline studies completed in areas that are not already developed. It was suggested at the meeting in Luverne that the levels of fecal coliform found in Northern Minnesota were indicative of background levels for Minnesota. We believe it is unwise to make this assumption. It seems that the combination of differences in landscape and temperature gradient make this comparison invalid for determining what an appropriate background level of fecal coliform may be. Furthermore, if background levels are found to be naturally higher than those previously estimated, then consideration should be given to raising the standard of fecal coliform.

4. **DNA Fingerprinting:** It would have been especially helpful if this report had utilized DNA evidence to pinpoint the source of fecal coliform bacteria in the stream. This type of research would have helped determine the specific source of fecal coliform in the stream during the given season. RNCA does not believe that the proportions of fecal coliform in the stream should be based solely on the volume of fecal

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coliform generated by each source category. In the future, DNA 'fingerprinting', if reliable, should be used to provide greater confidence in the source of fecal coliform in the impaired reaches of the watershed. In addition, this use of technology will give a higher degree of confidence to the delivery ratios used for determining the level of contribution of fecal coliform from each source in the watershed. The RNCA wants to see more research conducted on the levels of fecal coliform generated and delivered by both wildlife and non-compliant septic systems in the impaired reaches of the Rock River Watershed.

5. **Sources and Quantity of Sampling:** The RNCA believes that the use of data from volunteers as opposed to trained public employees needs to be viewed with caution. All data should be independently verified before being included in *any* report that assesses the relative contribution of *any* pollutant from specific sources. In addition, 40 samples over a period of ten nine years hardly qualify as a comprehensive look at the fecal coliform concentrations in the Rock River over the past decade. More sampling should have been conducted before any conclusions were made regarding the state of the Rock River.

6. **Reasonable Assurance:** The concentration of fecal coliform in the Rock River watershed has been trending down over the past 40 years. Current manure management requirements and manure application setbacks are designed to protect water quality. The RNCA believes the declining concentration of fecal coliform in the Rock River is most likely due to improved Waste Water Treatment Facilities, improved septic systems *and* the result of voluntary best management practices employed by livestock and crop producers. Manure, when properly handled, is a beneficial soil amendment that increases organic matter, improves water retention and reduces soil erosivity. Current input costs in agriculture are requiring even small producers to strongly consider the economic value of good manure management. Manure application is a complex issue; both the benefits and the potential negative impacts need to be addressed in the dynamics of fecal coliform and turbidity. The RNCA would like to urge the MPCA to use 'common sense' when creating mandates or implementation strategies in response the TMDL report. Unfunded mandates are neither well received by those they are imposed upon, nor are they effective in achieving their desired goals. Proper funding needs to be put in place if changes to livestock and crop producers' management practices are suggested.

Thank you for the opportunity to provide comment and input into this TMDL study. We sincerely hope that you incorporate our comments and concerns into the final draft of the report.

Regards,

Members of the Rock-Nobles Cattleman's Association

Minnesota Pollution Control Agency
Marshall Office

There is a significant seasonality of fecal coliform concentrations in the Rock River. While the highest concentrations of bacteria are observed during storm runoff, most samples were collected during dry conditions. The data indicate, as shown in Figure 3.9, fecal coliform bacteria concentrations rise throughout the summer when plotting non-storm event samples. Thus, on average, due to most of the dataset being collected during dry conditions and the apparent relationship of temperature and bacterial concentration, the late summer months had the highest bacterial levels.

It is true that fecal coliform and E. coli are not easily understood due to the complexities of the organisms. There is definitely a need for research to understand bacteria response and longevity in watersheds. It is important to note that the presence of fecal coliform and E. coli is an indicator that harmful pathogens may be present in the water. This is a major concern for human health. As new research becomes available, this information may be used in the Rock River watershed to better target implementation activities and future research.

2. **Wildlife and Noncompliant Septic Systems:** A great deal of time was spent talking about the high contributions of fecal Coliform attributable to animal agriculture. This assumption is based purely on volume and was not actually verified by any part of the study. Certainly, the majority of fecal Coliform in the watershed is produced for livestock. However, it may be that noncompliant septic systems and wildlife are higher contributors of fecal Coliform than estimated in this report, particularly during the low flow periods when the fecal Coliform concentrations are the highest. It is vitally important to have accurate delivery ratios when estimating the contributions of fecal Coliform from any given source. We believe that the data in the report indicate wildlife and noncompliant septic systems are the primary contributors of fecal Coliform in the summer months. Low flow periods are providing less dilution. The relatively small volumes of fecal Coliform generated by non-compliant septic systems and wildlife (in comparison to that in livestock manure storage areas) will make a greater impact on the concentration of fecal Coliform during these times. These are the sources actively contributing to the impaired reaches of the stream during the months that exceeded the water quality standard. It is more logical to look at actively discharging sources at the periods when the water quality standard is exceeded, rather than a focusing on an unknown and unproven 'lag time' of fecal Coliform persisting in the soil. Focusing on 'lag times' only implies that land application of manure is the main culprit. Funding dollars should look for practical, cost-effective solutions rather than chasing a rabbit down a hole. In today's world, being called a polluter carries extremely negative consequences. It is unfair to label livestock producers polluters without substantiated evidence to back up the claim.

   Response: *The lag time of manure was not used to imply that water quality standard exceedances were related to manure application as a source. While the exceedances in August and September may be partially related to wildlife and illegal septic systems, the fact that the samples collected during that time were mostly during storm events. This supports the conclusion that overland runoff was a likely cause of higher bacteria levels.*

   It was not the intent of the Report to label livestock producers as "polluters". The Report simply is stating that there are several potential sources of fecal coliform bacteria and based on actual population estimates and approved scientific evidence, livestock produce the most fecal coliform bacteria. The fate and transport of bacteria to the Rock River is varied and dependant on several conditions. The goal of this Report is to provide some known information regarding the impairments to satisfy the EPA's requirements. Upon approval by the EPA, the implementation planning effort is an opportunity to form solutions, focus research, and develop partners to protect the Rock River from further degradation. This effort will hopefully restore water quality to create a river that is safe for

swimming, canoeing and fishing. Improving the water quality in the Rock River will also benefit agricultural uses such as irrigation and livestock uses.

3. **Background Levels of Fecal Coliform:** The RNCA recognizes that more research needs to be completed in determining what levels of fecal Coliform exist in undisturbed prairie ecosystems. We realize that there is some difficulty in getting baseline studies completed in areas that are not already developed. It was suggested at the meeting in Luverne that the levels of fecal Coliform found in Northern Minnesota were indicative of background levels for Minnesota. We believe it is unwise to make this assumption. It seems that the combination of differences in landscape and temperature gradient make this comparison invalid for determining what an appropriate background level of fecal Coliform may be. Furthermore, if background levels are found to be naturally higher than those previously estimated, then consideration should be given to raising the standard of fecal Coliform.

   Response: *You are correct about the need to better understand fecal coliform in the environment. The example of northern Minnesota's streams was used to illustrate a point, and the MPCA agrees that the characteristics of the Rock River watershed and northern Minnesota vary substantially. While the MPCA does conduct periodic reviews of water quality standards, any change that would make the bacteria standard less protective to human health is unlikely at this time.*

4. **DNA Fingerprinting:** It would have been especially helpful if this report had utilized DNA evidence to pinpoint the sources of fecal Coliform bacteria in the stream. This type of research would have helped determine the specific source of fecal Coliform in the stream during the given season. RNCA does not believe that the proportions of fecal Coliform in the stream should be based solely on the volume of fecal Coliform generated by each source category. In the future, DNA 'fingerprinting', if reliable, should be used to provide greater confidence in the source of fecal Coliform in the impaired reaches of the watershed. In addition, this use of technology will give a higher degree of confidence to the delivery ratios used for determining the level of contribution of fecal Coliform from each source in the watershed. The RNCA wants to see more research conducted on the levels of fecal Coliform generated and delivered by both wildlife and non-compliant septic systems in the impaired reaches of the Rock River Watershed.

   Response: *There has been and continues to be research in Minnesota and throughout the country regarding the sources, movement, and survival of bacteria in watersheds. DNA fingerprinting may prove to be important to the understanding of fecal coliform bacteria and research is needed to gain this information. This technology can be extremely time consuming and expensive but there are studies where DNA fingerprinting has been used for TMDLs. Currently, the Minnesota Department of Agriculture and several partners are conducting a project where this technology is used. We generally prefer our local projects, with their limited resources, to focus on implementation efforts rather than research, although some investigative-type monitoring may be appropriate.*

5. **Sources and Quantity of Sampling:** The RNCA believes that the use of data from volunteers as opposed to trained public employees needs to be viewed with caution. All data should be independently verified before being included in *any* report that assesses the relative contribution of any pollutant from specific sources. In addition, 40 samples over a period of ten years hardly qualify as a comprehensive look at the fecal Coliform concentrations in the Rock River over the past decade. More sampling should have been conducted before any conclusions were made regarding the state of the Rock River.

Response: *It is the responsibility of the MPCA to monitor Minnesota's rivers and lakes to assess water quality, and to report the results to the public. The MPCA has established guidelines and criteria to assess Minnesota's waters for several water quality parameters. It serves to guide the interpretation and application of current water quality standards that are in water quality rules. This guidance can be found at http://www.pca.state.mn.us/publications/wq-iw1-04.pdf. In the assessment process, all data is reviewed before a site is placed on the Impaired Waters List. The public has an opportunity to review and comment on the Impaired Waters List when it is updated (every two years). In addition, the public also can provide comments and input on the assessment guidance that was referenced above. This is updated and open for comment every two years as well. More information is available in that document.*

The Rock River and Elk Creek were listed because the data indicated impairments to its designated uses. Additional monitoring conducted in 2007 shows that impairments still exist. The Report summarized and used the most recent data available. Regarding the comment on the use of transparency tube data, the MPCA has conducted analysis showing a strong relationship between transparency and turbidity. In addition, waters are not listed based exclusively on transparency data unless there is corroboration from a local or state water resource manager. If there are concerns regarding assessment procedures, please contact Louise Hotka, MPCA, 651-296-7223 for further information.

6. **Reasonable Assurance:** The concentration of fecal Coliform in the Rock River watershed has been trending down over the past 40 years. Current manure management requirements and manure application setbacks are designed to protect water quality. The RNCA believes the declining concentration of fecal Coliform in the Rock River is most likely due to improved Waste Water Treatment Facilities, improved septic systems *and* the result of voluntary best management practices employed by livestock and crop producers. Manure, when properly handled, is a beneficial soil amendment that increases organic matter, improves water retention and reduces soil erosivity. Current input costs in agriculture are requiring even small producers to strongly consider the economic value of good manure management. Manure application is a complex issue; both the benefits and the potential negative impacts need to be addressed in the dynamics of fecal Coliform and turbidity. The RNCA would like to urge the MPCA to use 'common sense' when creating mandates or implementation strategies in response to the TMDL report. Unfunded mandates are neither well received by those they are imposed upon, nor are they effective in achieving their desired goals. Proper funding needs to be put in place if changes to livestock and crop producers' management practices are suggested.

Response: *In 40 years, there have been many changes in rural America that have improved water quality. However, the Rock River is not meeting its designated uses, so more work needs to be done. Together, as a collective unit of farmers, homeowners, cities, and industries, water quality can improve. This can be accomplished without mandates; a more effective approach is to work together to design a plan that is suitable for all involved. In fact, as you may know, a process has been developed to guide the upcoming task of creating an implementation plan. The foundation of the implementation plan is to have buy-in from stakeholders in the Rock River watershed. Personalized letters requesting input and assistance were sent to agricultural groups, targeted individuals, and environmental groups in January 2008. In addition, at the public meetings held on January 24, 2008, input and sign up of interested individuals to serve on an Advisory Committee was requested. To date, the Rock County Land Management Office has received several inquiries and sign ups. I would encourage a representative from RNCA to serve on the Advisory Committee to ensure that your concerns, ideas and input are included.*

Again, thank you for reviewing and commenting on the *Draft Rock River Fecal Coliform and Turbidity TMDL Assessment.* Your comments provide valuable insight to the success of this project and future TMDL projects. If you have any further questions about this project, please contact me at 507-537-6497 or check out the project website: http://www.pca.state.mn.us/water/tmdl/project-rockriver.html.

Sincerely,

Kelli Daberkow

Kelli Daberkow
Pollution Control Specialist Senior
Marshall Office
Regional Division

KD:bjw

cc: Randall Hukriede, MPCA