UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 14 2008

REPLY TO THE ATTENTION OF:
WW-16J

Brad Moore, Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Dear Mr. Moore:

U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for High Island Creek and Rush River, including supporting documentation and follow-up information. High Island Creek and Rush River are located in south-central Minnesota in McLeod, Nicollet, Renville and Sibley counties. The TMDLs were calculated for fecal coliform bacteria in five stream reaches located in the High Island Creek, and two stream reaches in the Rush River. The High Island Creek Assessment Units (AUs) are 07020012-578, -598, -535, -589, and -588, Buffalo Creek, Buffalo Creek/County Ditch 59, two unnamed segments of High Island Creek, and High Island Creek Ditch 2, respectively. The Rush River AUs are 07020012-553 and -512, the South Branch Rush River and the Rush River, respectively. The TMDLs address the pathogen impairment of Recreational Use during the recreational season April through October.

These TMDLs meet the requirements of section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Minnesota's seven bacteria TMDLs, covering multiple stream segments in the seven AUs in two watersheds for fecal coliform. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Minnesota's effort in submitting this TMDL, addressing recreational season use, and look forward to future TMDL submissions by the State of Minnesota.

wq-iw7-12g

If you have any questions, please contact Kevin Pierard, Chief of the Watersheds and Wetlands Branch at (312) 886-4448.

Sincerely,

Timothy C. Henry
Acting Director, Water Division

Enclosure

cc: David Johnson, MPCA
Scott MacLean, MPCA

TMDL: High Island Creek and Rush River, Minnesota
Date:

DECISION DOCUMENT FOR THE APPROVAL OF HIGH ISLAND CREEK AND RUSH RIVER, MINNESOTA, TMDL

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;

(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and (5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comment:

Location Description/Spatial Extent: The TMDL is submitted by the Minnesota Pollution Control Agency (MPCA), in conjunction with the Water Resources Center at Minnesota State University, Mankato, and Sibley County. Sections 1.1 and 2.1 of the TMDL submittal states that the High Island Creek Watershed (HICW) is located in south central Minnesota covering 153,222 acres. They are in the Lower Minnesota River watershed that eventually feeds into the Minnesota River near Henderson. The Rush River Watershed (RRW) covers 257,775 acres, and the two watersheds are located in located in Renville, Sibley, Nicollet, and McLeod Counties. Stream reaches are impaired for recreational use by fecal coliform bacteria, shown in Table 1.1 below from the TMDL submittal. Approximately 47% and 44.7% of the population is rural in HICW and RRW respectively; the land use is 85% and 90% agricultural. In the two watersheds there are over 623 feedlot facilities which include dairy, beef, swine, and poultry for a total of over 100,000 animal units in the watersheds. Section 1.1 of the TMDL submittal states that the area is gently rolling in two-thirds (in the HICW) to three-fourths (in the RRW) of the western portion of the watershed, and steeply sloping in the remaining eastern portion. The soils range from poorly-drained to well-drained loamy soils. RRW has many public open ditches, with artificial drainage increasing the stream length by 400 – 500% of the original stream. Tiling and open tile intakes are extensive. Thousands of residents utilize rural septic systems. Small cities in the watersheds include Arlington, New Auburn, and a portion of Stewart (HICW) and Gaylord, Winthrop, Gibbon, and Lafayette.

Table 1.1 - Fecal Coliform Bacteria Impaired Stream Reaches

High Island Creek Watershed			
Buffalo Creek	Unnamed Cr to High Island Cr	2006	07020012-578
Buffalo Creek / County Ditch 59	High Island Ditch 5 to Unnamed Stream	2006	07020012-598
High Island Creek	JD 15 to Unnamed Cr	2002	07020012-535
High Island Creek	Unnamed Cr to Minnesota R	2006	07020012-589
High Island Creek Ditch 2	Unnamed Cr to High Island Cr	2008	07020012-588
Rush River Watershed			
Rush River, South Branch	Unnamed Ditch to Rush R	2008	07020012-553
Rush River	S Br Rush R to Minnesota R	2002	07020012-521

Problem Identification: Section 1.1 states that fecal coliform levels in both watersheds are among the highest of all monitored streams in Minnesota. There are five stream reaches impaired in the HICW and two reaches in the RRW. Section 3.2.1 of the TMDL states that the segments are impaired for Class 2B waters. "The quality of Class 2B surface waters shall be such as to permit

the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable."

Pollutant of Concern: Fecal coliform bacteria is the pollutant of concern. In high flow conditions the bacteria delivery is primarily runoff related and in dry conditions direct discharges are more dominant. Overall, in both watersheds the urban land use is only about 2%. The sources are both point and nonpoint and are discussed below.

Source Identification: Section 5 describes the sources of contaminants into the waterbodies. They include the point sources (PS):

- "straight pipe" septic systems;
- **Permitted Wastewater Treatment Facility (WWTF)**

High Island Creek

Table 5.1a - Wastewater Treatment Fac

Name/Location	Permit Number
Arlington	MN0020834
Totals	

Table 5.5a - Wastewater Treatment Fac

Name/Location	Permit Number
Altona	MN0067610
Gaylord	MN0051209
Gibbon	MNG580020
Lafayette	MN0023876
Starland	MN0067334
Waldbaums	MN0060798
Winthrop	MN0051098
Totals	

Rush River

Table 5.6a - Wastewater Treatment Fac

Name/Location	Permit Number
Gibbon	MNG580020
Lafayette	MN0023876
Totals	

- **Permitted Confined Animal Feeding Operations (CAFO) Feedlots**

High Island Creek

Table 5.1b - Livestock Facilities with NPDES Permits

Facility	ID Number
Brad Baumgardt Farm Sec 2	129-103300
Tesch Farms	143-50002
Five Star Dairy LLC	143-60460
Daniel Thoele Farm	143-89168
Larry Baumgardt Farm	143-89746

Table 5.2b - Livestock Facilities with NPDES Permits

Facility	ID Number
Brad Baumgardt Farm Sec 2	129-103300
Larry Baumgardt Farm	143-89746

Table 5.3b - Livestock Facilities with NPDES Permits

Facility	ID Number
Tesch Farms	143-50002
Five Star Dairy LLC	143-60460
Daniel Thoele Farm	143-89168

Table 5.4b - Livestock Facilities with NPDES Permits

Facility	ID Number
Five Star Dairy LLC	143-60460
Daniel Thoele Farm	143-89168

Table 5.5b - Livestock Facilities with NPDES Permits

Facility	ID Number
Warren Krohn Farm	103-50002
Waibel Pork Inc	103-50003
Corey Hotovec Farm	103-50007
Christensen Farms Site C016	103-50008
Josie's Pork Farm Inc - Gaylord	103-50017
Bruce & Laurie Platz Farm - Sec 10	103-97452
Duane & David Gran Farm - Sec 19B	103-97625
Adam Gleisner Farm Sec 2	103-97632
Pinpoint Research - Sec 29	103-97780
Paul & Donita Platz Farm	143-50001
MG Waldbaum - Golden Egg Farm	143-50004
Minnesota Pullets	143-50005

Rush River

Table 5.6b - Livestock Facilities with NPDES Permits

Facility	ID Number
Warren Krohn Farm	103-50002
Waibel Pork Inc	103-50003
Corey Hotovec Farm	103-50007
Christensen Farms Site C016	103-50008
Josie's Pork Farm Inc - Gaylord	103-50017
Bruce & Laurie Platz Farm - Sec 10	103-97452
Duane & David Gran Farm - Sec 19B	103-97625
Adam Gleisner Farm Sec 2	103-97632
Pinpoint Research - Sec 29	103-97780
Paul & Donita Platz Farm	143-50001

- **Permitted WWTF Bypass** (from both watersheds)

Table 8.1.5 – WWTP Bypasses in HICW and RRW by Year (2000-2004)

Watershed	Bypass City	Bypass Date
High Island Creek	New Auburn	4/22/2001
High Island Creek	New Auburn	7/14/2004
High Island Creek	New Auburn	4/11/2001
Rush River	Lafayette	4/21/2000
Rush River	Lafayette	4/11/2001
Rush River	Lafayette	4/23/2001
Rush River	Winthrop	4/22/2001
Rush River	Winthrop	8/29/2001

The nonpoint sources (NPS) are:

- runoff from farms, pastures, and small non-permitted feedlots;
- overland runoff and open tile intakes;
- macropores/preferential flow;
- wildlife and natural background; and,
- human impacts.

The major significant source of contamination in the basin is livestock. Sections 8.2 – 8.4 of the TMDL states that 99% of the fecal material in the basin is from livestock though all of it is not transported or delivered to the streams. Ninety-seven percent of livestock manure is used for fertilizer, with 26% not incorporated into the soil (surface applied or available for runoff). There are 763 feedlot facilities in both basins, primarily swine (43 – 54% of the animal units in High Island and Rush River watersheds, respectively), followed by beef (29 - 14%), dairy (25 - 15%), turkey (1 - 3%) and chicken (negligible - 11%). Most of the feedlots in these basins are small and have fewer than 300 animal units.

Though many feedlots are contained, there remains a risk posed by open lots. Overland runoff and open tile intakes, macropores/preferential flow in soil, wildlife and natural background also contribute to the problem but in much less significant amounts. Studies have shown that fecal coliform can remain viable under certain soil conditions for several months.

Human impact (both PS and NPS) - Section 8.0 (8.1.1 – 8.1.7) of the TMDL describes the sources in more detail. Human population is a source via several pathways. The Noncompliant Individual Sewage Treatment Systems (ISTS) Section 8.1.2 in the TMDL states that there are approximately 1,413 ISTSs in both watersheds, with an average 54% allowing inadequately treated wastewater discharge by "straight pipe" systems in the TMDL submittal. The estimates are very subjective, varying greatly in different counties, but inadequate wastewater treatment occurs in 30 – 62 % of the ISTSs in four counties in the two watersheds. Sewage from these systems is a major contributor to bacteria levels in streams, especially during low flow conditions. These systems are illegal, pursuant to Minnesota Rules Chapter 7080. Further, some homes in communities are not connected to wastewater treatment facilities. Wastewater Treatment Facility (WWTF) bypass occurs in emergencies, with high discharge during heavy precipitation; MPCA records show 8 bypasses from 2000 through 2004 (previous page, Table 8.1.5). Under non-emergency conditions, MPCA records show no WWTF violations from 2001 through 2005 (Section 8.1.6 of the TMDL). Sewage sludge from facilities may be applied only after processing or lime stabilization, but may contribute to the impairment if not properly treated.

Priority Ranking: The Executive Summary of the TMDL submittal states that this area was given a priority for TMDL development because the High Island Creek and Rush River systems rank among the highest fecal coliform bacteria concentrations in the entire Minnesota River Basin.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this first element.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality

target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:

Designated Uses: Section 3.2.1 of the TMDL submittal states that the waters are designated Class 2B; Minnesota Rules Chapter 7050 states: the quality of Class 2B surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable.

Standards: Fecal coliform standards are applicable between April 1 and October 31.

- not to exceed 200 organisms/ 100ml geometric mean of not less than five samples in any given calendar month,
- nor shall be more than 10% of all samples taken during any calendar month individually exceed 2000 organisms/ 100ml.

Target: The target is the standard as stated above and in Section 3.9, TMDL Endpoints, considered both chronic and acute standards, respectively. Neither the monthly or daily loading capacities (nor individual allocations) may be exceeded.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for stream flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

Comment:

TMDL = Loading Capacity (LC) = WLA + LA + MOS

The loading capacity for the impaired waterbodies is the water quality standard for fecal coliform multiplied by flow; that is, fecal coliform organisms not to exceed 200 organisms/100 ml (as a geometric mean of not less than 5 samples in any given calendar month), nor shall more than 10% of all samples taken during any calendar month individually exceed 2000 organisms/100ml, multiplied by flow (standard x flow = LC), as shown in each flow regime in the TMDL. The TMDL has separate LC for each of the 5 segments in the High Island Creek and Rush River watershed labeled with "c" in the tables, i.e., 5.1c through 5.7c in the Rush River with both monthly and daily allocations shown in the first row of numeric values of each table. Tables A and B below are combinations of daily load capacity for all the segments, listed with their respective tables in the TMDL.

Table A. High Island Creek segments loading capacity

Location & FDI In trillion org/day	Table in TMDL	High	Moist	Mid	Dry	Low
Unnamed creek to MN River	5.1c	27.15	10.03	3.82	0.54	*
JD15 to Unnamed Creek	5.2c	14.74	5.44	2.07	0.29	0.29
Buffalo Creek; unnamed creek to High Island Creek	5.3c	3.19	1.18	0.45	0.06	0.01
Buffalo Creek; High Island Ditch 5 to unnamed stream	5.4c	2.19	0.81	0.31	0.04	0.01
High Island Ditch 2, unnamed creek to High Island Creek	5.7c	1.86	0.69	0.26	0.04	0.01

Table B. Rush River segments loading capacity

Location & FDI In Trillion org/day	Table in TMDL	High	Moist	Mid	Dry	Low
Rush River; South Branch Rush River to MN River	5.5c	45.7	16.88	6.42	0.91	*
Rush River; South Branch; Unnamed ditch to Rush River	5.6c	20.91	7.72	2.94	0.41	0.08

* Note - WWTF design/discharge flow exceeded low flow

Typically, loading capacities are expressed as a mass per time (e.g. pounds per day). For fecal coliform, however, states often use concentration to measure loading capacity rather than mass per time, with concentration being the amount of matter in a given volume. This approach is consistent with EPA's regulations which define "load" as "an amount of matter ... that is introduced into a receiving water..." 40 C.F.R. §130.2. To establish the loading capacities for the Blue Earth Basin Watershed, MPCA, Water Resources Center, and BERB used Minnesota's WQS for fecal coliform which has a geometric mean for a calendar month of not less than five samples not to exceed 200 organisms/ 100ml, nor shall more than 10% of all samples taken during any calendar month individually exceed 2000 organisms/ 100ml. Thus, the loading capacity is expressed as a concentration, i.e. the amount of bacteria colonies per volume of water. A loading capacity is "the greatest amount of loading that a water can receive without violating water quality standards." 40 CFR §130.2. So, a loading capacity set at the WQS will assure that the water does not violate WQS."

Method for cause and effect: Section 5.0 of the TMDL reviews the load duration curve (LDC) methodology that was used in this TMDL.

1. The flow monitoring data came from the U. S. Geological Survey gage station from the High Island Creek outlet (1973 – 2005). The data reflect a range of natural occurrences from extremely high flows to extremely low flows. Monthly mean flow values were obtained for April through October from 1973 through 2005 to correspond with the fecal coliform standard. These values were sorted by volume and a flow duration curve was developed.

2. From flow and water quality data, fecal coliform loads were calculated for five flow regimes under high flow, moist, mid-range, dry, and low flow conditions. The mid-range flow value for each flow regime was used to calculate the total monthly loading capacity (TMLC), using continuous flow data converted to monthly mean flow for the recreational season months and the fecal coliform standard of April through October. The values used for calculation are shown in Table 5.0b of the TMDL submittal.

3. Several conversion factors were used to determine the loading capacity per month for each flow regime. The capacity, in organisms/month, is calculated from volume, concentration, time, and flow conversion factors. The series of conversions are incorporated by reference, found in Section 4.0 of the TMDL submittal.

4. The conversion from monthly load to daily load is described in Section 4.0, the Daily Loading Capacity and Allocations Section. The daily maximum value standard of 2000org/100ml is 10X the geomean monthly standard of 200org/100ml. To adjust for the difference in how the standards are measured, and for the difference in the timeframe to daily:

1. daily value is 1/30th existing monthly temporal value;
2. daily standard is 10X existing monthly standard;
3. so to convert, both $1/30^{th}$ of the monthly value and 10X the monthly standard need to be incorporated, or **1/3 of the monthly value = daily.**

Critical Conditions: Section 2.4 of the TMDL states that there is a strong relationship of bacteria concentration to rainfall intensity, soil erosion, and pollutant movement. The relationship is confirmed as Table 2.4 of the TMDL lists the average monthly precipitation for three watersheds with the greatest amount of precipitation occurring in four months, May, June, July, and August. Figure 2.5 below is taken from the TMDL submittal shows the greatest average monthly flows occur in March, April, May, June, July, and August, with the first two months flow attributable to spring melt. In Section 3.3 the relationship is illustrated with a table showing impairment with exceedences of the geomean in April through September from twelve monitoring sites.

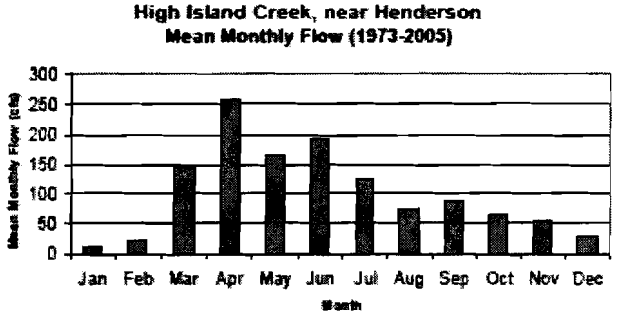

Figure 2.5 – Mean Monthly Flow for High Island Creek near Henderson (1973-2005)

Section 3.5 also discusses the strong relationship of not only flow to exceedences of bacteria but to Total Suspended Solids. The relationship is especially strong in the spring months when sediment loads increase from overland from stormwater, and streambank and gully erosion occurs. Further, there is a strong relationship in the literature, and sampling data from both watersheds, that resuspension of streambed sediments is a potential source.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this third element.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Comment:

Load allocation: Allocations are incorporated by reference into this document. The TMDL has separate LAs for each of the seven segments within the "c" labeled tables, i.e., 5.1c through 5.7c, with both monthly and daily allocations. After the WLA and MOS were determined for a given flow zone, the remaining loading capacity was considered the load allocation, as shown in the equation: [LC – (WLA + MOS) = LA]. Overall, the percentage reduction from nonpoint sources

is 65% at the highest flow regime, 54% reduction at the moist flow regime, 46 – 51% at the midflow regime, 0 – 29% at the dry regime, and 50 – 67% at low flow regimes when applicable. The margin of safety is a large part of the remaining allocation, and wasteload reduction is comparatively small, ranging from 0 – 9%, with one outlier at one flow regime requiring a 34% reduction. When reviewed in a temporal framework, most segments need the greatest load reductions from May through September, with May needing the least reduction and then the rest of the months having much greater exceedences of the standard.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fourth element.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permitees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Comment:

Wasteload Allocation (WLA):

- Three segments of seven in the watersheds, shown on the following page, have NPDES Wastewater Treatment Facility (WWTF) WLA. (Daily allocations by flow regime shown in the Loading Capacity Section above.)
- Straight pipe septic systems are illegal unpermitted discharges and are allocated zero wasteload.
- Livestock facilities were listed previously in Section 1 of this document as CAFOs under the NPDES program and are allocated zero wasteload;
- There are no MS4s in the TMDL study area.

High Island Creek

Table 5.1a - Wastewater Treatment Facilities

Name/Location	Permit Number	Design Flow (mgd)	WLA (t-dgst./mo.)
Arlington	MN0020834	0.670	0.152
Totals		0.670	0.152

Table 5.5a - Wastewater Treatment Facilities

Name/Location	Permit Number	Design Flow (mgd)	WLA (t-dgst./mo.)
Altona	MN0067610	0.106	0.012
Gaylord	MN0051209	4.401	0.500
Gibbon	MNG580020	0.505	0.057
Lafayette	MN0023876	0.095	0.022
Starland	MN0067334	0.066	0.007
Waldbaums	MN0060798	0.400	0.091
Winthrop	MN0051098	2.086	0.237
Totals		7.659	0.926

Rush River

Table 5.6a - Wastewater Treatment Facilities

Name/Location	Permit Number	Design Flow (mgd)	WLA (t-dgst./mo.)
Gibbon	MNG580020	0.505	0.057
Lafayette	MN0023876	0.095	0.022
Totals		0.600	0.079

Section 4.0 further describes that allocations were calculated by multiplying the design flows of the facility by the permitted discharge limit of 200 org/ ml. For some impaired reaches where the design flows exceed the minimum stream flow at low flow, this calculation can not be implemented because the facility flow cannot exceed stream flow; the facility flow is a *portion* of the stream flow. (See Tables A and B in Section 3 above.) The alternate method for these smaller facilities under dry or low flow conditions is a concentration-based limit. An equation rather than an absolute number is used:

Allocation = (flow contribution from a given source) X (200 org/ml).

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fifth element.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Comment:

The MOS is shown in Table 7 is a compilation of the MOS values in the TMDL tables. The MOS is calculated for each flow regime and is the difference between the median flow and minimum flow in each of the flow zones. For example, the MOS for the high flow zone is the 95th percentile flow value subtracted from the 100th percentile flow value (the entire flow zone is from 100th percentile to the 90th). The resulting value was converted to a load and used as the MOS. This methodology, taking the difference between the median flow and minimum flow per zone, was repeated in each of the remaining four flow zones and the results are shown in the table below. Individual MOS allocations are

Table 7. MOS under various flow conditions

Flow	high	moist	mid	dry	low
MOS	34.2%	45.6%	48.8%	70.9% (one segment at 65.8%)	50% (two segments at 33.3%)

EPA finds that the TMDL document submitted by MPCA contains an appropriate MOS satisfying all requirements concerning this sixth element.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

Comment:
Seasonal variation was considered in this TMDL as described in Section 4.0 of the TMDL. There are five distinct flow regimes that were used for the development of the allocations, from near drought to near flood conditions. Reductions vary, based on these flow regimes that occur at all times of the year during the recreational season from April through October.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this seventh element.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

Comment:

Section 9.0 of the TMDL submittal states several methods for reduction of pathogen transport. The methods include:

- feedlot runoff controls – registration of feedlots and manure storage areas;
- land application of manure – buffer strips, immediate incorporation of manure, setback rules, and maintenance of residue;
- ISTS – use acceptable designs and implement the rules;
- Municipal waste water disinfection;
- Erosion control and sediment reduction;
- Planned rotational grazing, and;
- Urban stormwater management.

The livestock- and agricultural-related reasonable assurances are the most significant because these sources contribute the most to the pathogen impairment. Current manure application rules are based on research but more needs to be studied regarding setback rules. Many rules are already in place at Minnesota Rules chapters 7020 (feedlot rule) and 7080 (septic design). There will also be a focus on addressing regulatory gaps for small feedlots.

EPA finds that this criterion has been adequately addressed.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Comment:

Section 7.0 of the TMDL submittal states that continued bacterial monitoring will occur in each watershed. High Island Creek Watershed is funded through 2009 and Rush River Watershed through 2008 in Phase II Implementation of the Clean Water Partnership (CWP) projects.

EPA finds that this criterion has been adequately addressed.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Comment:

The implementation discussion is in Section 8.6 of the TMDL. Rules, planning tools, funding, and suggestions were discussed in the TMDL.

- Minnesota rules for feedlot controls are to strengthen the implementation. The runoff from feedlots will be reassessed by October, 2010; more funding for feedlots would be critical in addressing this implementation method. Suggestions include monitoring of soils, effective manure incorporation techniques into the soils, developing BMPs for reduction of bacteria into tile lines, and tracking the progress of methods in achieving implementation goals.
- For small operators with < 300 animal units, there is a need for grant dollars to develop manure management plans.
- Manure management for horse owners is suggested, including cost share for composting structures.

- Minnesota counties are delegated to implement ISTS construction and upgrades, which are occurring at a faster rate. More funding is needed, and demonstration projects were recommended, along with education for landowners and contractors. Recommendations included hiring a coordinator for education, compliance, and regulation.
- Track practices to evaluate progress.

EPA reviews, but does not approve, implementation plans. EPA finds that this criterion has been adequately addressed.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Comment:

Public outreach activities are detailed in the TMDL submittal and began long before the draft TMDL. There is a chronology of monthly activities that occurred in 2005 and 2006 that included meetings, open house, letters, surveys, and factsheets. The TMDL was public noticed from July 21, 2008 to August 20, 2008. Copies of the draft TMDL were made available upon request and on the Internet web site: http://www.pca.state.mn.us/water/tmdl/index.html#drafttmdl. One comment letter was sent by the Minnesota Department of Agriculture to the MPCA during the public comment period. The comments were adequately addressed by MPCA and are included in the administrative record of the TMDL.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this eleventh element.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval.* Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states

that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

Comment:

The EPA received the final TMDL on October 16, 2008, accompanied by a submittal letter dated October 8, 2008. In the submittal letter, MPCA stated the submission includes the final TMDLs for fecal coliform bacteria for High Island Creek and Rush River. The AUs 07020012-521, -535, -553, -578, -588, -589, -598 on Minnesota's 2008 303(d) list, and several listing cycles previous, are included in the TMDL submittal. The High Island Creek and Rush River watersheds are impaired by pathogens for recreation of all kinds, including bathing.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this twelfth element.

13. Administrative Record

Conclusion

After a full and complete review, EPA finds that the TMDL for the High Island Creek and Rush River watersheds satisfies all of the elements of an approvable TMDL. This approval addresses 7 segments for fecal coliform for a total of 7 TMDLs in the Assessment Unit IDs shown below.

Table 1.1 - Fecal Coliform Bacteria Impaired Stream Reaches

Stream Name	Description	Year Listed	MPCA River Assessment Unit ID
High Island Creek Watershed			
Buffalo Creek	Unnamed Cr to High Island Cr	2006	07020012-578
Buffalo Creek / County Ditch 59	High Island Ditch 5 to Unnamed Stream	2006	07020012-598
High Island Creek	JD 15 to Unnamed Cr	2002	07020012-535
High Island Creek	Unnamed Cr to Minnesota R	2006	07020012-589
High Island Creek Ditch 2	Unnamed Cr to High Island Cr	2008	07020012-586
Rush River Watershed			
Rush River, South Branch	Unnamed Ditch to Rush R	2008	07020012-553
Rush River	S Br Rush R to Minnesota R	2002	07020012-521

EPA's approval of this TMDL does not extend to those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.