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

JUN 0 7 2007

REPLY TO THE ATTENTION OF
WW-16J

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

Dear Mr. Moore:

The United States Environmental Protection Agency (U.S. EPA) has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Blue Earth River Basin, including supporting documentation and follow up information. The Blue Earth River Basin is located in south-central Minnesota and northern Iowa across 14 counties. The TMDLs were calculated for fecal coliform bacteria in 17 stream reaches located in assessment units 07020009, 07020011, and 07020010 (07020009 -504, 501, 560, 521, 526, 503, 527, 522, 502, 505, 525; 07020011-503; 07020010-514, 512, 511, 501, and 517) and 4 additional impaired reaches located at the Watonwan River to Le Sueur River, Le Sueur River - Maple to Blue Earth River, Little Cobb River - Blue Run Creek to Big Cobb River, and Maple River - Rice Creek to Le Sueur River. 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 (CWA) and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, U.S. EPA hereby approves Minnesota's 21 bacteria TMDLs, covering multiple stream segments in the three AUs in the Blue Earth River Basin. The statutory and regulatory requirements, and U.S. 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. If you

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

Sincerely yours,

Jo Lynn Traub
Director, Water Division

Enclosure

cc: Lee Ganske, MPCA

TMDL: Blue Earth River Basin, Minnesota
Date:

DECISION DOCUMENT FOR THE APPROVAL OF THE BLUE EARTH RIVER BASIN, 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 the Blue Earth River Basin Alliance. Sections 1.1 and 2.1 of the submittal state that the Blue Earth River Basin (BERB) is located in 11 counties in southern Minnesota and 3 counties in northern Iowa, covering 3540 mi^2. The basin includes three watersheds, and in 2006 there were seventeen waterbodies listed as impaired for recreational use, shown in Table 1.1 below from the TMDL submittal. The three watersheds are the Blue Earth River, the Le Sueur River, and the Watonwan River watersheds. This document also calculates loads for four more impaired segments that will be listed in the 2008 303(d) listing cycle. The additional segments are Watonwan River to Le Sueur River, Le Sueur River from Maple River to Blue Earth River, Little Cobb River from Blue Run Creek to Big Cobb River, and Maple River from Rice Creek to Le Sueur River. Approximately 60% of the population lives in cities and 40% of the population is in rural areas. The land use is 88% agricultural, with primarily corn and soybean production. There are over 2300 feedlot facilities, primarily swine, for a total of 2.2 million swine in the basin. Section 2.1 of the TMDL submittal states that the area is gently rolling prairie and a glacial moraine with river valleys and ravines. There are also flat plains and tall grass prairies. The soil is poorly drained clay and silt/clay soils, with extensive tiling and ditching for crops.

Problem Identification: Section 3.2.1 of the TMDL states that the segments are impaired for a healthy community of cool or warm water sport or commercial fish, aquatic life, and their habitat, and impaired for recreational use and bathing.

Pollutant of Concern: The pollutant of concern is fecal coliform bacteria.

Source Identification: Sections 4.0 and 5.0 describe both the point sources (PS) and nonpoint sources (NPS). The point sources for the TMDL allocations are:

- permitted WWTF;
- MS4 communities;
- livestock requiring permits, and;
- "straight pipe" septic systems.

The nonpoint sources are:

- runoff from farms, pastures, and small non-permitted feedlots;
- runoff from small non-MS4 communities, and;
- wildlife.

Table 1.1 - Fecal Coliform Bacteria Impaired Stream Reaches in the BE River Basin

Stream Name	Description	Year Listed	MPCA River Assessment Unit ID
Blue Earth River Watershed			
Blue Earth River	W Br Blue Earth R to Coon Cr	1994	07020009-504
Blue Earth River	Le Sueur R to Minnesota R	1994	07020009-501
Cedar Creek	T104 R33W S6 west line to Cedar Lk	2006	07020009-560
Cedar Creek	Cedar Lk to Elm Cr	2006	07020009-521
Center Creek	George Lk to Lily Cr	2006	07020009-526
Center Creek	Lily Cr to Blue Earth R	1996	07020009-503
Dutch Creek	Headwaters to Hall Lk	2006	07020009-527
Elm Creek	S Fk Elm Cr to Cedar Cr	2006	07020009-522
Elm Creek	Cedar Cr to Blue Earth R	1996	07020009-502
Judicial Ditch 3	Headwaters to Elm Cr	2006	07020009-505
Lily Creek	Headwaters to Center Cr	2006	07020009-525
Le Sueur River Watershed			
Little Beauford Ditch	Headwaters to Cobb R	2004	07020011-503
Watonwan River Watershed			
Watonwan River	Headwaters to N Fk Watonwan R	2006	07020010-514
Watonwan River	N Fk Watonwan R to Butterfield Cr	2006	07020010-512
Watonwan River	Butterfield Cr to S Fk Watonwan R	2006	07020010-511
Watonwan River	Perch Cr to Blue Earth R	1994	07020010-501
Watonwan River, South Fork	Willow Cr to Watonwan R	2006	07020010-517

Human impact (both PS and NPS) - Section 4.0 (4.1.1 – 4.1.7) 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 in the TMDL states that there are approximately 5,500 ISTSs across the basin, with an estimated 39% allowing inadequately treated wastewater discharge by "straight pipe" systems. The estimates are very subjective, varying greatly in different counties, but inadequate wastewater treatment occurs in 5 to 75% of the ISTSs. 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. The Unsewered Communities Section states that both unincorporated and incorporated communities contribute to the bacteria problem in Faribault, Watonwan, Kossuth, Blue Earth, Jackson, Martin, and Waseca Counties. Table 4.1.3 below is taken directly from the TMDL, listing the communities. There is runoff from Phase II Municipal Separate Storm Sewer System (MS4) communities with a population >10,000, (or a population > 5,000 if discharging into a valuable or polluted water) and non-MS4 communities. The only MS4 communities are Fairmont, Mankato, and Waseca shown in Table 4.1.4 in the TMDL. Note the estimated population is only within the basin; because the entire communities are larger they are classified as Phase II. Wastewater Treatment Facility (WWTF) bypass occurs in emergencies, with high discharge during heavy precipitation; MPCA records show 38 bypasses from 2000 through 2004 (Appendix D of the TMDL). Violations of permits also contribute to the fecal coliform load. MPCA records show 23 WWTF violations from 2000 through 2004 (Appendix E of the TMDL).

The WWTFs that were included in the TMDL calculation is shown in Section 5, WLA, later in this document. Sewage sludge from the facilities may be applied only after processing or lime stabilization, but may contribute to the impairment if not properly treated.

Table 4.1.3 - Incorporated and Unincorporated Unsewered Communities

Incorporated Community	County	Population
Walters*	Faribault	82
Lecalle*	Watonwan	96
Ormsby	Watonwan	152
Odin	Watonwan	95
Ledyard	Kossuth	258
Lakota	Kossuth	255
Total Incorporated		938

Unincorporated Community	County	Population
Rapidan Town	Blue Earth	250
Garden City	Blue Earth	230
Guckeen	Faribault	36
Huntley*	Faribault	91
Bergen	Jackson	20
Fish Lake	Jackson	115
Village Of East Chain	Martin	48
Village Of Immogene	Martin	22
Village Of Fox Lake	Martin	25
Elk's Park Lakeview Est	Waseca	27
Rolling Greens	Waseca	30
Fairway Acres	Waseca	60
Otisco	Waseca	45
Smiths Mill	Waseca	31
Alma City	Waseca	25
Marawan	Waseca	45
Reeds Lake	Waseca	65
St Olaf Lake	Waseca	53
East Lake Elysian Subd.	Waseca	58
Grogan	Watonwan	35
South Branch	Watonwan	30
Long Lake	Watonwan	200
Total Unincorporated		1,532

The other major and more significant source that impacts the basin is livestock. Section 4.2 – 4.4 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-eight percent of livestock manure is used for fertilizer, with 27% believed not incorporated into the soil (available to runoff). As stated previously, there are over 2300 feedlot facilities, primarily swine (78% of the animal units), followed by beef (13.3%), dairy (5.4%), turkey (1.8%) and chicken (1.1%). Similar proportions are attributed to the amount of fecal coliform produced by animal type, shown in Figure 4.5.1a in the TMDL.

A complete list of over 200 livestock facilities with NPDES permits is in Appendix C of the TMDL, including animal unit type, facility identification, and bacteria-impaired stream reach identification. Section 10.2 of the TMDL further describes the categories of feedlots and feedlot rules, they include:

- >300 animal units planning new construction or expansion;
- A pollution hazard that has not been corrected;
- Designation as a CAFO (> 1000 animal units or direct man-made conveyance to waters);
- >300 animal units and manure application in sensitive areas (related to soils, gradient, and drinking water supplies).

There are, however, more the 72% of the animal feedlots in the Greater Blue Earth River Basin in Minnesota with < 300 animal units, totaling over 139,000 animal units. The issues are addressed by agency and facility category as follows:

- State of Minnesota - > 1000 animal units;
- County staff - 1000 >300 animal units;
- Future project partnership - < 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, pets, 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.

Priority Ranking: The Executive Summary of the TMDL submittal states that this area was given a priority for TMDL development because the Blue Earth River system contributes high pollutant loads to the Minnesota River, but is also popular for recreational use, such as fishing, canoeing, and swimming. The water quality issues and recreational use have lead to local and state focus for both policy and TMDL development.

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 Blue Earth River is 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, 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, a monthly geometric mean shall be below 200 org/100 ml (of not less than 5 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., multiplied by flow, as shown in each flow regime in Table 5.0b of the TMDL. (Standard x flow = LC). Loading capacity is incorporated by reference into this document. The TMDL has separate LC for each of the 17 segments labeled with "d" in the tables, i.e., 6.11(d) through 6.17(d), and 4 segments 7.1(d) through 7.4(d) with both monthly and daily allocations shown in the first row of numeric values of each table.

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 be 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 three U. S. Geological Survey gage stations, near the outlets of Blue Earth, Le Sueur, and Watonwan Rivers. 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 1976 through 2004. 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 5.0 on page 46 of the TMDL.

4. The conversion from monthly load to daily load is described later in Section 5.0, directly from the TMDL submittal: "All maximum daily loading capacity and allocation values are set at 1/3 of the monthly loading capacity and allocation values based on the following rationale: The upper 10^{th} percentile criterion is 10 times the geometric mean criterion (2000 org/100ml = upper 10^{th} percentile; 200 org/ 100ml -= geometric mean). Thus, assuming average daily loading capacities and allocations are $1/30^{th}$ of the monthly values, 10 times the average daily values could be allocated as maximum daily loading capacities and allocations under the upper 10^{th} percentile standard. In mathematical terms the maximum daily value = 10 x $1/30^{th}$ of the monthly value = $10/30^{th}$ or 1/3 of the monthly value."

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 five communities in the watershed with the greatest amount of precipitation occurring in June, July, and August. Figure 3.5a in the TMDL submittal shows the greatest average monthly fecal colifrm bacteria geometric mean concentrations occur in June, July, and August. Later in the document, based on the TMDL allocations, June, July and August are when the greatest reductions need to occur.

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 17 segments labeled with "d" in the tables, i.e., 6.1(d) through 6.17(d), and 4 segments 7.1(d) through 7.4(d) 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 LA. Overall, the greatest reduction from nonpoint sources of 83-61% is required at the highest flow regime, 77-59% reduction at the moist and mid flow regimes, and 64-18% reduction at dry and low flow regimes. The margin of safety is a large part of the remaining allocation, and wasteload reduction is comparatively small. When reviewed in a temporal framework, most segments need the greatest nonpoint source load reductions in June, July, and August.

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): Allocations are incorporated by reference into this document. The TMDL has separate WLAs for facilities for each of the 17 segments labeled with "b" in the tables, i.e., 6.1(b) through 6.17(b), and 4 segments 7.1(b) through 7.4(b). The TMDL also has WLAs for each of the 17 segments labeled with "d" in the tables, i.e., 6.1(d) through 6.17(d), and 4 segments 7.1(d) through 7.4(d) with both monthly and daily allocations. Overall, there is no reduction needed from point sources at the high, moist, or mid flow regime.

- Tables 6.1b and 6.2b on the following page are the WWTF, and are a subset of the information in the TMDL;
- the MS4 NPDES permitted wasteloads are for Fairmont, Waseca and Mankato; they are found in Tables "c" and "d" in the TMDL, located in seven segments, hereby incorporated into this document by reference;
- livestock facilities requiring permits are allocated zero wasteload;
- straight pipe septic systems are allocated zero wasteload. The WLAs account for an average estimated 4% of the total TMDL reduction, ranging from 0 – 11% reduction at WWTF (7 of 21 locations have no WWTF) and 0 – 17% reduction for MS4s (14 of 21 locations have no MS4s).

Many segments require no reduction at dry and low flow regimes, but those segments that do range from 47-0% reduction, but a median reduction of only 5%. The WLA for treatment facilities, as described in Section 5.0, state that allocations were calculated by multiplying the wet weather 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. 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.

Tables 6.1b and 6.2b, name and permit number of WWTFs

Name/Location	Permit Number
Buffalo Center	IA0047821
Elmore	MN0021920
Alden	MN0020605
Ambov	MN0022624
Blue Earth	MN0020532
Bricelyn	MN0022918
Buffalo Center	IA0047821
Butterfield	MN0022977
Darfur	county permitted
Delavan	MN0066095
Elmore	MN0021920
Fairmont	MN0030112
Freeborn	MNG580018
Frost	MN0064432
Good Thunder	MN0020851
Granada	MNG580023
Hartland	MN0049174
Janesville	MNG580025
Kiester	MN0039721
Lewisville	MN0065722
Madelia	MN0024040
Madison Lake	MN0040789
Mapleton	MN0021172
Mountain Lake	MNG580035
New Richland	MN0021032
Northrop	MN0024384
Pemberton	MNG580075
Rake	IA0062804
St Clair	MN0024716
St James	MN0024759
Trimont	MN0022071
Truman	MN0021652
Vernon Center	MN0030490
Waldorf	MN0021849
Welcome	MN0021296
Wells-Easton	MN0025224
Winnebago	MN0025267

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 below (Table 8.0 of the TMDL) 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 incorporated by reference into this document, for each of the 17 segments labeled with "d" in the tables, i.e., 6.1(d) through 6.17(d), and 4 segments 7.1(d) through 7.4(d) with both monthly and daily values.

Table 7 MOS under various flow conditions

flow	high	moist	mid	dry	low
MOS (range based on all 21TMDLs)	16-21%	22-26%	24-30%	39-41%	36-41%

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 5.0 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 11.0 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 9.0 of the TMDL submittal states that a lot of the monitoring that was completed in the BERB was conducted by the Clean Water Partnership (CWP). The partnership completed monitoring and diagnostic studies. Studies were conducted to determine the sources and the degree of impairment. The Interagency Water Monitoring Initiative (IWMI) originally did not sample for bacteria but plans to do so in the future. The Minnesota Milestone River Monitoring Program was implemented to collect samples for a long period of time. It was started in 1953 by the Water Pollution Control Commission. The MPCA now runs the program and has 80 sites, 3 of which are in the BERB.

EPA find. 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:

Implementation in Section 10.0 of the TMDL submittal and addresses feedlots runoff reduction, manure management planning, non-conforming septics and unsewered communities, and municipal wastewater treatment. Minnesota rules strengthen the implementation, and funding is available, though inadequate, through the Board of Soil and Water Resources (BSWR) and the County Soil and Water Conservation Districts. Section 10.2 states that future planning and focus is on small operators with < 300 animal units, with 72% of the feedlots in the basin falling into this category. There is recognition of a critical need to address the gap in regulating these small

feedlots. The steps include identifying the manure management issue, developing nutrient management templates, defining critical zones for setbacks, developing a marketing plan, defining sustainable farming practices, determining which predictive model for best land management, partnering with conservation planning community, and assisting with an implementation plan for the GBERB (Greater Blue Earth River Basin) TMDL. Nonconforming septics needs more funding, but there is also a shortage of contractors who install septic systems and some incentive to have more contractors available is needed. Homeowners also need more education about how their issues can affect water quality downstream. Some unsewered communities are in the process of developing sewage treatment.

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, radio interviews, displays, brochures, letters, maps and factsheets. The TMDL was public noticed from November 6, 2006 to December 6, 2006. Copies of the draft TMDL were made available upon request and on the Internet web site: http://www.pca.state.mn.us/publications/reports/tmdl-blueearth-fecal.pdf. Four entities or individuals provided comments to the MPCA during the public comment period. The comments were adequately addressed by MPCA and are included as Appendix F of the TMDL. MPCA also adequately addressed U.S. EPA comments within the document.

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 Blue Earth River Basin TMDL on May 15, 2007, accompanied by a submittal letter dated May 10, 2007. In the submittal letter, MPCA stated the submission includes the final TMDLs for fecal coliform bacteria for the Blue Earth River Basin. The AUs 07020009 – 504, 501, 560, 521, 526, 503, 527, 522, 502, 505, 525; 07020011-503; 07020010-514, 512, 511, 501, and 517 on Minnesota's 2006 303(d) list, and several listing cycles previous to the current list, are included in the TMDL submittal. The four reaches not listed are: Watonwan River to Le Sueur River, Le Sueur River - Maple to Blue Earth River, Little Cobb River - Blue Run Creek to Big Cobb River, and Maple River – Rice Creek to Le Sueur River, all intended to be on the 2008 303(d) list. The Blue Earth River Basin is impaired for a healthy community of cool or warm water sport or commercial fish, aquatic life, and their habitat, and impaired for recreational use and bathing by pathogens.

The U.S. EPA is approving TMDLs for the pollutant fecal coliform in the four segments that are not on MPCA's 2006 Section 303(d) list. While developing the Blue Earth River TMDL project, MPCA determined that these additional segments were impaired by fecal coliform. The segments were clearly identified in the draft TMDL dated July 2006. The public had the opportunity to comment on these additional impaired segments in the TMDL during the MPCA public comment period. These segments were included in the final TMDL submitted to U.S. EPA. The TMDL report discusses the impairments for all the segments, and MPCA determined TMDL allocations and calculations for all segments including the additional four segments, as MPCA developed the TMDL on a watershed basis.

U.S. EPA believes it was reasonable for MPCA to develop TMDLs for the previously unlisted segments in the subwatersheds at the same time it was developing TMDLs for the listed segments. Because the public has had the opportunity to comment on the decision to include these additional segment within the TMDL, as well as the calculations used to establish these TMDLs, and because the transmittal letter of the final TMDL states that the TMDL report is for the three subwatersheds of the Blue Earth River Watershed. U.S. EPA believes it is appropriate to approve the additional four TMDLs at this time.

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 Blue Earth River watershed satisfies all of the elements of an approvable TMDL. This approval addresses 21 segments for fecal coliform for a total of 21 TMDLs in the Assessment Unit IDs shown below.

Table 1.1 - Fecal Coliform Bacteria Impaired Stream Reaches in the BE River Basin

Stream Name	Description	Year Listed	MPCA River Assessment Unit ID
Blue Earth River Watershed			
Blue Earth River	W Br Blue Earth R to Coon Cr	1994	07020009-504
Blue Earth River	Le Sueur R to Minnesota R	1994	07020009-501
Cedar Creek	T104 R31W S6 west line to Cedar Lk	2006	07020009-560
Cedar Creek	Cedar Lk to Elm Cr	2006	07020009-521
Center Creek	George Lk to Lily Cr	2006	07020009-526
Center Creek	Lily Cr to Blue Earth R	1996	07020009-503
Dutch Creek	Headwaters to Heli Lk	2006	07020009-527
Elm Creek	S Fk Elm Cr to Cedar Cr	2006	07020009-522
Elm Creek	Cedar Cr to Blue Earth R	1996	07020009-502
Judicial Ditch 3	Headwaters to Elm Cr	2006	07020009-505
Lily Creek	Headwaters to Center Cr	2006	07020009-525
Le Sueur River Watershed			
Little Beauford Ditch	Headwaters to Cobb R	2004	07020011-503
Watonwan River Watershed			
Watonwan River	Headwaters to N Fk Watonwan R	2006	07020010-514
Watonwan River	N Fk Watonwan R to Butterfield Cr	2006	07020010-512
Watonwan River	Butterfield Cr to S Fk Watonwan R	2006	07020010-511
Watonwan River	Perch Cr to Blue Earth R	1994	07020010-501
Watonwan River, South Fork	Willow Cr to Watonwan R	2006	07020010-517

Stream Name	Description	Future Year to be Listed	MPCA River Assessment Unit ID
Blue Earth River	Watowan River to Le Sueur River	2008	NA
Le Sueur River	Maple River to Blue Earth River	2008	NA
Little Cobb River	Blue Run Creek to Big Cobb River	2008	NA
Maple River	Rice Creek to Le Sueur River	2008	NA