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

RECEIVED
JUN 22 2009
MPCA COMMISSIONERS OFFICE

JUN 18 2009

REPLY TO THE ATTENTION OF:
WW-16J

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

Dear Mr. Eger:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Hardwood Creek Watershed, including supporting documentation and follow up information. The Hardwood Creek Watershed is located in eastern Minnesota in Washington and Anoka Counties. The TMDLs were calculated for Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD) to address biota impairment from sediment and low Dissolved Oxygen (DO), respectively. The TMDLs address the biota impairment of aquatic life and recreational use in the Hardwood Creek Watershed (ID#070102060-596).

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 two TMDLs in the Hardwood Creek Watershed. 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 these TMDLs, addressing aquatic life and recreational 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,

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Chris Zadak, MPCA

wq-iw8-15g

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TMDL: Hardwood Creek Watershed, Minnesota
Date:

DECISION DOCUMENT FOR THE APPROVAL OF THE HARDWOOD CREEK WATERSHED, 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: Section 1.B. of the TMDL states that Hardwood Creek is located in east central Minnesota in the Rice Creek Watershed of the Upper Mississippi River Basin in Washington and Anoka Counties. This TMDL study includes two reach IDs, 07010206-595 and -596. The drainage area is 16,000 acres in May Township and includes the cities of Hugo, Forest Lake, and Lino Lakes. The upper two-thirds of Hardwood Creek (ID -595) is also called Washington County Judicial Ditch (JD) #2, which originates south of Rice Lake and flows northward then west toward Highway 61. The western one-third of the creek is downstream of Highway 61 (ID -596). The creek was separated at the highway by the Minnesota Pollution Control Agency (MPCA) based on naturally occurring low levels of Dissolved Oxygen (DO). This TMDL is for total suspended solids (TSS) and biological oxygen demand (BOD) for a total of 2 TMDLs in reach ID-596, which addresses the fish bioassessments and low DO. The low DO impairment in reach ID-595 is due to natural background, and is not addressed by a TMDL.

Land use: Section 1.B. of the TMDL states that the topography in the upper portion of the watershed is low-lying swale with wetland communities, and downstream the soils become sandier with a slight slope increase. The land use is 82% agricultural or vacant, and 18% developed. There are seven small feedlot facilities: six are dairy/beef, and one is a horse operation.

Problem Identification: Section 1.C. of the TMDL states that the waters are impaired for aquatic life use. Bioassessment shows a low Index of Biological Integrity (IBI), from 38 to 51 measured in several monitoring seasons, out of a total exceptional score of 100. Though scores have improved, MPCA requires a longer interval of a sustained non-impaired score in order to delist with a greater degree of confidence. Evaluation of the biology includes species richness and composition, trophic and reproductive functions, and fish abundance and condition. The calculation of scores includes a numeric value for total number of species, and number of: wetland species, minnow species, intolerant species, invertivore species, and fish per 100 meters. Percent values are used for tolerant species, dominant two species, simple lithophils, and DELT anomalies (tumors). There is also a lack of gravel-spawning fish and benthic insectivores.

Pollutant of Concern: The pollutants of concern are sediment and low DO, which both affect aquatic life.

Source Identification:

- Sedimentation - Increased erosion occurs due to abundant channelizing and ditching for drainage of agricultural lands. Sedimentation alters the gravel and cobble substrate, decreases pool depth, and results in a loss of reproductive habitat, feeding habitat, and refuge. Beaver dams also cause the sediment to settle out. Further, the creek flows through the Anoka Sand Plain, which adds easily eroded materials to the system.
- The low DO is most commonly due to organic enrichment, which causes an increase in BOD. Animal access to the stream and manure applications are the largest contributors of organic enrichment, along with row crops planted to the banks of the creek with little or no riparian buffer. Further, many parts of the creek naturally have low riparian cover, especially in wetland areas. Low DO occurs at both low and high flow conditions, with low DO groundwater influences at low flow or stagnant water, and under high flow there is BOD loading from instream erosion of organic matter.

Section 1.C also states that the upper reach of the river (ID-595) has naturally occurring low DO due to underlying peat deposits and poorly oxygenated groundwater, and could never achieve DO levels above the standard; therefore, only reach ID-596 will be addressed by TMDLs. However, MPCA noted that implementation activities will be occurring throughout the watershed, and those activities will very likely have an impact on improving DO levels in both reaches.

Though the watershed is dominated by nonpoint sources, point sources also contribute to the impairment, shown in the table below, modified from the TMDL submittal. Point sources are predominantly Municipal Separate Storm Sewer Systems (MS4) for NPDES Phase II communities (population less than 100,000), and there is no permitted industrial stormwater in the watershed.

Table 1. Point sources in the Hardwood Creek Watershed (modified from Table 17 in the TMDL)

WLA – Permitted stormwater	
MS4 or other source	Permit #
City of Hugo	MS400094
City of Lino Lakes	MS400100
RCWD	MS400193
Anoka County	MS400001
Washington County	MS400160
MnDOT Metro District	MS400170
Construction stormwater	various
Industrial stormwater	No current permitted sources

Priority Ranking: Section 1.A of TMDL submittal states that the priority ranking is implicit in the TMDL schedule included in Minnesota's 303(d) list. The schedule shows a start for the project in 2004 and a completion in 2008. The criteria for ranking in MPCA's program include all or some of the following: impairment impacts on public health and aquatic life; public value of the water; ability to complete the TMDL in an expedient manner, strong data, restorability, technical capability, local assistance, and sequencing within the watershed.

Surrogate measures: TSS will be used as a surrogate for sedimentation, which affects the biological assessment. Abundant channelizing and ditching are utilized for drainage, which decreases storage and sinuosity, changes flow characteristics, erosional patterns, channel depth, and other stream characteristics that provide habitat for the fish community.

BOD will be used as a surrogate for low DO. BOD levels were measured in only one sampling season, but the values of fecal coliform indicators were very high, indicative of direct animal input or animal waste runoff. There is also great diurnal fluctuation of DO likely caused by algal growth or macrophytes in the adjoining wetlands, due to organic enrichment. Increased algal growth affects biota by decreasing visibility, habitat complexity, respiratory effectiveness, and prey availability.

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 - The Hardwood Creek Watershed has an aquatic life and recreation designated use, Class 2B, as found in Minnesota's Rule 7050.0430.

Standard for Biota - Section 2.A of the TMDL states that there is a narrative standard found in Minnesota Rules Chapter 7050.0150 for biocriteria. The IBI is the numeric equivalent for the attributes needed for a healthy fish community and is based on drainage area:

- **> 46 points** for the waterbodies less than 200 sq. mi., and
- > 61 points for waterbodies greater than 200 sq. mi.

These scores are used to determine impairment and attainment of habitat/biota, but the TMDL allocations will be for BOD and TSS.

Standard for BOD - Sections 2.B and 2.C state that to achieve a DO of 5 mg/l daily minimum, the surrogate must reach a target of **3.2 mg/l BOD.** The BOD target is based on using the 75th % ile of reference conditions for the North Central Hardwood Forests ecoregion. (The DO standard is modified in the upper reaches of Hardwood Creek "to maintain natural background conditions," due to the natural low DO level found in groundwater and from underlying peat deposits.) The overall linkage of low DO and impaired biota is discussed in Section 1.C of the TMDL. An increase in BOD and nutrients, decrease in canopy cover, and change in channel morphology all contribute to increased algae, and subsequent low DO which impairs the biotic community.

Standard for TSS – Section 2.C states that there is no numeric standard for TSS, but rather a numeric target was developed based on a narrative standard of less erosion and lower contribution of sediment. The target for **TSS is 19 mg/l.** Computer modeling was used to derive the target, which links the characteristics of the channel and sediment to TSS, discussed further in the next section of this document. Another linkage of sedimentation and impaired biota is made in Section 1.C of the TMDL, showing that increasing the channelization changes the hydrology, thereby increasing sediment by erosion and stream bank instability, and decrease in substrate complexity needed for habitat and shelter.

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 steam 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 capacities for TSS and BOD are shown under several flow conditions and are in the last row of the tables below, taken directly from the TMDL.

Table 17. TSS TMDL: LA. WLA. MOS

Source		% Allocation	TMDL (average lbs/day)				
			High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
			183.7 - 65.0 cfs	65.0 - 15.3 cfs	15.3 - 6.4 cfs	6.4 - 1.9 cfs	1.9 - 0.0 cfs
LA		86%	8,874	2,153	821	372	122
WLA – Permitted stormwater							
MS4 or other source	Permit #						
City of Hugo	MS400094						
City of Lino Lakes	MS400100						
RCWD	MS400193						
Anoka County	MS400001	4%	413	100	38	17	6
Washington County	MS400160						
MnDOT Metro District	MS400170						
Construction stormwater	Various						
Industrial stormwater	No current permitted sources						
MOS		10%	1,032	250	95	43	14
Total		100%	10,319	2,503	954	432	142

Table 18. BOD TMDL: LA. WLA. MOS

Source		% Allocation	TMDL (lbs/day)				
			High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
			183.7 - 65.0 cfs	65.0 - 15.3 cfs	15.3 - 6.4 cfs	6.4 - 1.9 cfs	1.9 - 0.0 cfs
LA		84%	1,460	354	135	61	20
WLA – Permitted stormwater							
MS4 or other source	Permit #						
City of Hugo	MS400094						
City of Lino Lakes	MS400100						
RCWD	MS400193						
Anoka County	MS400001	6%	104	25	10	5	2
Washington County	MS400160						
MnDOT Metro District	MS400170						
Construction stormwater	Various						
Industrial stormwater	No current permitted sources						
MOS		10%	174	42	16	7	2
Total		100%	1,738	421	161	73	24

Method for cause and effect: Section 3.A of the TMDL reviews the many methodologies used in this TMDL, shown in Table 9 on the following page. The outputs of some of the methodologies are inputs to others.

Table 9. Modeling Approach Summary

Models or Analytical Technique	Parameters Analyzed	How the method or model was used
Load Duration Analysis	Flow, TSS, BOD	Examined streamflow variation and load distributions for stressor identification. Calculated TMDLs for TSS and BOD for each of five flow intervals.
Load Estimator (LOADEST)	TSS loads	Used program to estimate annual TSS loads based on 2002-2004 monitoring data.
XP-SWMM	Hydrology and hydraulics	Analyzed current and future conditions flows within the watershed. Used as flow input to CONCEPTS model.
CONCEPTS	Sediment export, bed and bank erosion	Estimated instream sediment load from bed and bank erosion.

- Load duration analysis method:
    - Flow duration curves were developed using the full range of hydrological conditions in a five year interval at each monitoring site. The resultant curves show flow values and the frequency that the flow is exceeded. Both flood conditions and low flow are represented.
    - Then, load duration curves were developed using the flows multiplied by the standards or target concentrations. The curve on the following page represents the concentrations meeting standards, and the points above the curve are pollutant exceedances. Note more exceedences occur under high flows and moist conditions. High flow exceedences more often occur from precipitation-related sources (stormwater, overland run-off) on the left portion of the plot and non-precipitation related (failing septics, cattle in the stream, wastewater discharge) exceedences more often occur under low flow conditions on the right portion of the plot (Figure 11 on the following page). The same trends occurred for the BOD load duration curves but with a smaller amount of data. The TMDL for each flow regime was established by using the midpoint flow condition multiplied by the concentration target.
- LOADEST, developed by the United States Geological Survey, estimates constituent loads in streams based on streamflow and concentration. LOADEST was used to summarize the TSS data and estimate TSS loads to calibrate the CONCEPTS model.
- XP-SWMM (Storm Water Management Model) is a hydrology and hydraulics model used to evaluate various hydrologic modification scenarios. Flow predictions from the model were used as input to the CONCEPTS model.
- CONCEPTS (CONservational Channel Evolution and Pollutant Transport System) was used to derive the target. The model is an instream sediment transport model that simulates open channel hydraulics, sediment transport, channel morphology, and geotechnical processes of bank failure. The model can track bed changes and channel widening to predict the instream TSS concentration under different scenarios. One scenario represented implemented instream stabilization practices in Hardwood Creek.

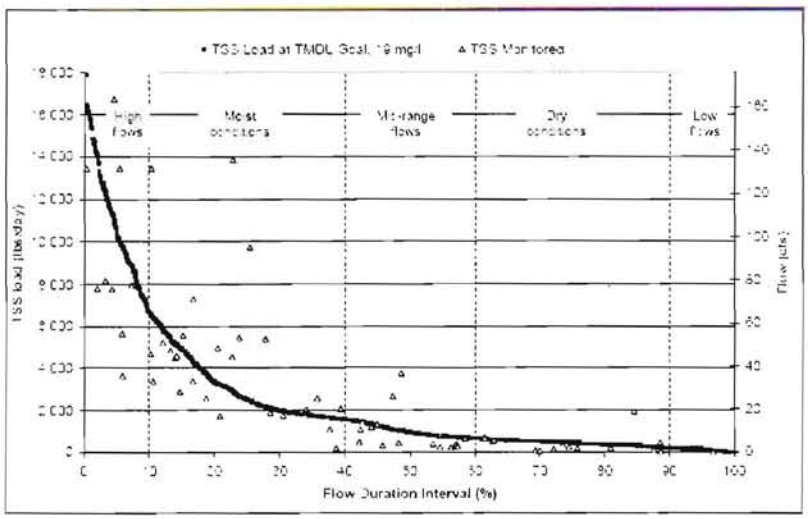

Figure 11. TSS Load Duration Curve for Hardwood Creek, MN at Site H2.
(Flow and TSS data from 1999-2004.)

Critical Conditions: Section 4 states that critical conditions occur in the summer months due to low flow, biomass increases, and excessive algal growth which reduces available oxygen. The TMDL accounts for the critical condition because the load duration curves account for all flow conditions, and the target for BOD and TSS are set to be protective during critical periods.

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 Allocations are shown in Tables 17 and 18 in the previous section. Instream and non-permitted stormwater are the two main categories of the LA for this watershed. Loads are calculated for each of the five flow regimes, and account for 93% of the total allocation for the watershed. There is an overall reduction of 86% and 84% for TSS and BOD, respectively.

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 permittees 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 Allocations are shown in Tables 17 and 18 in the previous section of this document. There are no wastewater treatment plants or industrial dischargers in the watershed. The only point sources are stormwater - MS4s and various construction permits. Wasteloads are calculated for each of the five flow regimes, and account for 7% of the total allocation for the watershed. There is an overall reduction of 4% and 6% for TSS and BOD, respectively.

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 an explicit 10% for this TMDL. The MPCA states in Section 5 of the TMDL submittal that the LDC methodology intrinsically captures the water quality conditions with only a small margin of error. Daily flow calculations and inputs were used for this methodology and the other modeling, so the error is not large.

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.A of the TMDL. Both the IBI and the Qualitative Habitat Evaluation Index (QHEI) analysis and scoring include annual variation, and reflect the collective seasonal effects on the biota. Further, 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 flow regimes that occur at all times of the year.

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 of the TMDL states that NPDES permittees, along with 401 water quality certification, will provide reasonable assurance, as well as federal programs such Conservation Reserve Enforcement Program (CREP), Environmental Quality Incentives Program (EQIP), and Section 319 grants. On a more local level, the Rice Creek Watershed District (RCWD) is updating its watershed management plan. The cities in the watershed are planning for development and reviewing Storm Water Pollution Prevention Plans (SWPPPs) so that they are adequate for stormwater limits to comply with the TMDL or must be modified within 18 months. There is also a detailed implementation plan within the TMDL submittal.

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 10 of the TMDL states that the creek will be monitored to ensure that the water quality has improved. RCWD will be the lead to measure BMP effectiveness, and MPCA will lead biological monitoring. Sampling sites will be the same as historic locations; the schedule is yet to be determined.

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:

Section 8 of the TMDL has many suggestions and details for implementation, such as:

- Stream bank stabilization – locations with severe erosion will have a high priority for restoration;
- Forested riparian buffers – will provide protection for stream morphology and riparian habitat, and a 50 foot buffer is considered feasible;
- Meandered streams – will change the hydrology from channelization to meandering for effective sediment and nutrient storage;
- Livestock management – construction of exclusion fencing, livestock crossings and pathways, stockwater ponds, and earthen diversions are recommended, as are feedlot runoff controls and rotational grazing;
- Stormwater management – new rules focus on infiltration and volume control; local authorities, general permitting, and Phase II MS4 permits are all potential stormwater controls.

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:

There was a technical advisory committee (TAC) and a public advisory committee (PAC) formed for the TMDL process. Their schedules of meetings are shown below.

Table 20. TAC meetings held for the Hardwood Creek TMDL

Meeting Number	Meeting Topic	Meeting Date
Meeting #1	Review work plan and finalize 2004 monitoring plan	October 22, 2003
Meeting #2	Review Stressor ID process and historical water quality data analyses	February 4, 2004
Meeting #3	Review 2004 monitoring data	November 22, 2004
Meeting #4	Review data to support splitting Hardwood Creek into two reaches at Highway 61	January 4, 2005
Meeting #5	Review final stressor identification documents and review LAs	September 2, 2005

Table 21. PAC meetings held for the Hardwood Creek TMDL

Meeting Number	Meeting Topic	Meeting Date
Meeting #1	General Introduction of the TMDL Process/ Why is Hardwood Creek considered	May 10, 2005
Meeting #2	Stressor Identification Process	June 9, 2005
Meeting #3	Habitat Alteration	July 28, 2005
Meeting #4	DO/Total Phosphorus	September 6, 2005

The draft was public noticed from March 9, 2009 to April 8, 2009. Copies of the draft TMDL were made available upon request, in news releases, and on the Internet web site: http://www.pca.state.mn.us/publications/wq-iw8-15b.pdf
Comments were received from one agency during the public comment period. The comments were adequately addressed by MPCA and are included in the final TMDL submittal. MPCA also adequately addressed 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 Hardwood Creek Watershed TMDL on May 26, 2009, accompanied by a submittal letter dated May 18, 2009. In the submittal letter, MPCA stated the submission addresses the impaired biota and low dissolved oxygen in the Hardwood Creek Watershed.

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

13. Conclusion

After a full and complete review, EPA finds that the TMDLs for the Hardwood Creek Watershed satisfy all of the elements of an approvable TMDL. This approval addresses TSS and BOD for a total of 2 TMDLs in stream reach ID 07010206-596.

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.

Waterbody	ID	Pollutant	Impairment
Hardwood Ck – Hwy 61 to Peltier Lake	07010206-596	BOD	DO
Hardwood Ck – Hwy 61 to Peltier Lake	07010206-596	TSS	Fish Bioassessments
Hardwood Ck – Headwaters to Hwy 61	07010206-595	No TMDL; DO likely due to natural background	