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

MAY 25 2012

REPLY TO THE ATTENTION OF:

WW-16J

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

Dear Ms. Flood:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Zumbro River Watershed, including supporting documentation and follow up information. The Zumbro River Watershed is located in southeastern Minnesota, in Rice, Steele, Goodhue, Dodge, Olmsted, and Wabasha Counties. The TMDLs address Aquatic Life Use impairments due to excess turbidity (total suspended solids).

The 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 17 TMDLs for total suspended solids for 17 waterbodies in the Zumbro River 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 this TMDL and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Justin Watkins, MPCA
David L. Johnson, MPCA

TMDL: Zumbro River Watershed, Minnesota
Effective Date: MAY 25 2012

Decision Document for Approval of the Zumbro River Watershed Turbidity 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 Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list. The water body 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 water body 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 water body. 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 water body 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; chlorophyl *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 Zumbro River watershed is located in southeastern Minnesota, in the Mississippi River Basin (HUC 07040004). Figure 1 of the TMDL submittal identifies the location of the watershed and subwatersheds. The watershed drains parts of six counties and is over 900,000 acres in size. The river flows north and east through Rice, Steele, Goodhue, Dodge, Olmsted, and Wabasha Counties where it reaches the Mississippi River south of Lake Pepin.

The TMDL addresses portions of the mainstem of the Zumbro River, including the lower portion draining into the Mississippi. There are several impaired tributaries that join the Zumbro River (Table 1 below, Figure 1 of the TMDL).

Table 1 Reach Description for the Zumbro River Watershed TMDL

Reach	Description	Assessment Unit ID	Affected Use	Pollutant
Silver Creek	Unnamed cr to Unnamed cr	07040004-552	Aquatic life	Turbidity
Silver Creek	Unnamed cr to Silver Lk (S Fk Zumbro R)	07040004-553	Aquatic life	Turbidity
Bear Creek	Tributary Unnamed cr to Unnamed cr	07040004-556	Aquatic life	Turbidity
Bear Creek	Headwaters to Willow Cr	07040004-539	Aquatic life	Turbidity
Willow Creek	Headwaters to Bear Cr	07040004-540	Aquatic life	Turbidity
Bear Creek	Willow Cr to S Fk Zumbro R	07040004-538	Aquatic life	Turbidity
Zumbro River, South Fork	Salem Cr to Bear Cr	07040004-536	Aquatic life	Turbidity
Cascade Creek	Headwaters to Unnamed cr	07040004-639	Aquatic life	Turbidity
Cascade Creek	Unnamed cr to S Fk Zumbro R	07040004-581	Aquatic life	Turbidity
Kings Run	Unnamed cr to Unnamed cr	07040004-601	Aquatic life	Turbidity
Zumbro River, South Fork	Cascade Cr to Zumbro Lk	07040004-507	Aquatic life	Turbidity
Dodge Center Creek	JD 1 to S Br M Fk Zumbro R	07040004-592	Aquatic life	Turbidity
Zumbro River, Middle Fork South Branch	Headwaters to Dodge Center Cr	07040004-526	Aquatic life	Turbidity
Zumbro River, Middle Fork, South Branch	Dodge Center Cr to M Fk Zumbro R	07040004-525	Aquatic life	Turbidity
Milliken Creek	Unnamed cr to Unnamed cr	07040004-554	Aquatic life	Turbidity
Zumbro River, Middle Fork	Headwaters to N Br M Fk Zumbro R	07040004-522	Aquatic life	Turbidity
Zumbro River	West Indian Cr to Mississippi R	07040004-501	Aquatic life	Turbidity

The watershed is largely rural. Cultivated land (mainly corn and soybeans) makes up about 70% of the watershed, with 12% hay and pasture. Forest land makes up an additional 11%, and about 5% is urbanized. Numerous cities are in the watershed, the largest being the City of Rochester,

with a population of just over 100,000. Several dams exist in the watershed, as well as several flood control reservoirs and basins (Section 2.2 of the TMDL).

MPCA identified five agroregions in the watershed. These are delineated on the basis of the soil type, landscape and climatic features, and land use (Section 2.2 of the TMDL). These agroregion delineations include types and amounts of animal units, potential for soil loss, and rates of phosphorus and nitrogen applications per acre.

Problem Identification/Pollutant of Concern: This TMDL will address the aquatic life use impairment due to turbidity identified in the Summary Table (Table 1 of the TMDL) and in the 2010 (most recently approved) Category 5 of the Integrated Report. Monitoring data documents exceedances of the Water Quality Standard (WQS) for turbidity. Turbidity in water is caused by suspended sediment, organic material, dissolved salts and stains that scatter light in the water column making the water appear cloudy. Excess turbidity can degrade aesthetic qualities of water bodies, increase the cost of treatment for drinking or food processing uses and can harm aquatic life. Aquatic organisms may have trouble finding food, gill function may be affected and spawning beds may be covered. Turbidity is a dimensionless measurement and thus loading capacity cannot be calculated; however, a surrogate, total suspended solids (TSS), was used to calculate the loading capacity and determine allocations. The surrogate is discussed in Section 2 below.

Source Identification: Section 3 of the TMDL submittal describes the turbidity data used for the development of the TMDL. Section 3.2 of the TMDL describes the sources of turbidity in the waterbodies.

Point Sources: MPCA identified 33 facilities discharging under an individual NPDES permit. Of these, 19 are municipal wastewater treatment facilities and 14 are industrial/other dischargers (Section 3.2 and Appendix A of the TMDL). These facilities all have effluent limits below the in-stream TSS targets. There are several Municipal Separate Stormwater System (MS4) communities in the watershed. Construction and industrial stormwater runoff are also regulated under the NPDES program and are considered minor sources of turbidity/TSS in the watersheds.

Nonpoint sources: Several nonpoint sources of TSS were determined by MPCA. The most prominent source is run-off from row cropland. MPCA noted that several of the agroregions contain soils that are susceptible to erosion. Rainfall can wash significant amounts of soils off the fields and into the waterbodies. Many of these fields have inadequate buffers along waterways, or have poorly vegetated gullies that can erode quickly.

Numerous streams in the watershed have been channelized, which can directly contribute TSS due to higher rates of erosion, or by transmitting water more quickly downstream and eroding streambanks. Agricultural tiling can also increase stream velocities and contribute to streambank erosion. Localized TSS loads can be contributed from livestock in or adjacent to the streambank, by disturbing the soil and streambank. MPCA developed a conceptual model to help determine the candidate sources and pathways for sediment transport in the watershed (Figure 3 of the TMDL).

Future Growth: MPCA reviewed land use patterns in the watershed, and concluded that a separate allocation for future growth (reserve capacity) is not needed. To account for growth, MPCA used the anticipated land use in the City of Rochester in 2020 (Section 3.7 of the TMDL). This accounts for the growth of the MS4 permitted area for the City and addresses the most likely changes in loadings. MPCA also developed a process to address future growth from new or expanding industrial or municipal discharge facilities. This process is discussed in greater detail in Section 5 of this document.

Priority Ranking: Minnesota does not include separate priority rankings for its waters in the TMDL. MPCA prioritizes its waters during the development of the impaired waters list. Development of the TMDL for this segment was scheduled to begin in 2006 with a final TMDL to be submitted in 2009. However, the TMDL was delayed by MPCA to further refine the load calculations.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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 water body, 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 Use of Waterbody: Most of the waters in the Zumbro River watershed are classified as 2B waters. MN Rules ch. 7050.0222 describes the designated beneficial use for 2B waters is as follows:

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. This class of surface water is not protected as a source of drinking water.

One water (West Indian Creek) is classified as a 2A water, which is designated to support a cold water fishery. West Indian Creek is not impaired, but does drain to the lower Zumbro River (Section 2.1 of the TMDL).

Water Quality Standard: Minnesota Rules Ch. 7050.0222 subpart 5 states that the turbidity water quality standard for Class 2B waters is **25 Nephelometric Turbidity Units (NTUs).**

Surrogate: To determine the appropriate surrogate pollutant to use in TMDL development, MPCA compared TSS data to turbidity data, and determined the equivalent TSS value to the turbidity standard of 25 NTU. A site-specific target was determined for each impaired reach. The turbidity measurements taken from the same sample as the TSS measurements were defined as "paired" measurements. Using the paired turbidity and TSS measurements for sites in the watershed, a multiple regression technique was used to predict TSS based on turbidity. This regression technique resulted in the target values in Table 2 below. The r^2 values ranged from 0.88 to 0.96, indicating the strong correlation between TSS and turbidity (Appendix D.2 of the TMDL).

Table 2 TMDL TSS surrogate values for turbidity

Reach Description	Assessment Unit ID	TSS equivalents to 25 NTU (mg/l)
Silver Creek, Unnamed cr to Unnamed cr	07040004-552	67
Silver Creek; Unnamed cr to Silver Lk (S Fk Zumbro R)	07040004-553	67
Bear Creek; Tributary Unnamed cr to Unnamed cr	07040004-556	72
Bear Creek; Headwaters to Willow Cr	07040004-539	72
Willow Creek; Headwaters to Bear Cr	07040004-540	72
Bear Creek; Willow Cr to S Fk Zumbro R	07040004-538	72
Zumbro River, South Fork; Salem Cr to Bear Cr	07040004-536	70
Cascade Creek; Headwaters to Unnamed cr	07040004-639	62
Cascade Creek; Unnamed cr to S Fk Zumbro R	07040004-581	62
Kings Run ; Unnamed cr to Unnamed cr	07040004-601	69
Zumbro River, South Fork; Cascade Cr to Zumbro Lk	07040004-507	69
Dodge Center Creek; JD 1 to S Br M Fk Zumbro R	07040004-592	70
Zumbro River, Middle Fork South Branch; Headwaters to Dodge Center Cr	07040004-526	70
Zumbro River, Middle Fork, South Branch; Dodge Center Cr to M Fk Zumbro R	07040004-525	70
Milliken Creek; Unnamed cr to Unnamed cr	07040004-554	48
Zumbro River, Middle Fork; Headwaters to N Br M Fk Zumbro R	07040004-522	39
Zumbro River; West Indian Cr to Mississippi R	07040004-501	92

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

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a water body 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:
Loading Capacity:
MPCA determined the total loading capacity, i.e., total maximum daily load, of TSS that is necessary to address the turbidity impairments affecting the aquatic life use of 17 reaches of the Zumbro River watershed. The loading capacities were calculated for each waterbody, and are in Tables 3-19 at the end of this document.

Method for cause and effect relationship: The loading capacities for TSS for the impaired segments of the Zumbro were determined by MPCA using the load duration curve (LDC) method (Page 16 of the TMDL). Pollutant concentrations were measured at water quality monitoring stations in the watershed (Appendix A of the TMDL). A simplified explanation is provided below.

1. Flow data - First, continuous flow data are required. No long-term flow gages are present in the Zumbro River watershed. To determine stream flows, MPCA used short-term gages in several of the waterbodies, which gathered data in 2007-2008. There were a few locations that had slightly longer term gages (8-10 years) which MPCA compared to the more recent data and determined that the responses were similar. Because of this analysis, MPCA believes it is appropriate to use the short-term gages (Appendix D of the TMDL). EPA has reviewed this analysis, and agrees that it is appropriate.
2. Water Quality data - The LDCs determined for the waterbodies were created by using existing data for each segment. Some segments had turbidity meters installed which gathered large amounts of data (15 minutes intervals for flow and turbidity), while some used the existing data sets which contained smaller amounts of data (Appendix D of the TMDL).
3. Load Duration Curves - The plots are derived from the flow data and water quality

data described above. Existing monitored water pollutant loads, represented by the blue points on the plot, are compared to target loads, the water quality standard line. If the existing loads are below (less than) the target line, no reduction needs to occur. Conversely, if the existing loads are above (greater than) the target load, a reduction is necessary to reach the target.

4. Analysis - The final step is to link the geographic locations of load reductions needed to the flow conditions under which the exceedences occur. Specific flow regimes contributing to pollutant loads, represented by the graph, are identified to determine under what flow conditions the pollutant exceedences are occurring. By knowing the flow conditions under which exceedences are occurring, MPCA can focus implementation activities on those sources most likely to contribute loads. MPCA provided an analysis for each LDC to determine under what conditions the exceedences are occurring (Section 3.4 of the TMDL).

The plots show under what flow conditions the water quality exceedences occur. Those exceedences at the right side of the graph occur during low flow conditions; exceedences on the left side of the graphs occur during higher flow events, such as storm runoff.

For two waterbodies (Silver Creek, Unnamed Cr to Unnamed Cr AUID: 07040004-552, Table 3 at the end of this document; and Silver Creek, Unnamed Cr to Silver Lk S Fk Zumbro R. AUID: 07040004-553, Table 4 at the end of this document), the flows under the lowest flow regimes are extremely small. For these flow conditions for these two waterbodies, the allocations are a formula rather than a load. The formula is the flow multiplied by the in-stream target for TSS (allocation = flow * TSS target).

Using the load duration curve approach allows MPCA to determine which implementation practices are most effective for reducing pollutant loads based on flow magnitude. For example, if loads are significant during storm events, implementation efforts can target those best management practices (BMPs) that will most effectively reduce runoff. This allows for a more efficient implementation effort. These TMDLs are calculated from the in-stream water quality target, and tie directly into Minnesota's water quality standard for the pollutants. The target for these TMDLs is the water quality standard, and therefore meeting this loading capacity should result in attainment of water quality standards. The load duration curve is a cost-effective TMDL approach to address the reductions necessary to meet WQS for these pollutants.

Weaknesses of the TMDL analysis are that non-point source (NPS) load allocations were not assigned to specific sources within the watershed, and the identified sources of the pollutants were assumed based on the data collected in the watershed, rather than determined by detailed monitoring and sampling efforts. Moreover, specific source reductions were not quantified. However, EPA believes the strengths of the State's proposed TMDL approach outweigh the weaknesses and that this methodology is appropriate based upon the information available. In the event that the pollutant levels do not meet WQSs in response to implementation efforts described in the TMDL submittal, the TMDL implementation strategy may be amended as new information on the watershed is developed, to better account for contributing sources of the impairment and to determine where reductions in the Zumbro River watershed are most appropriate.

Critical Condition: MPCA identified the critical environmental conditions for the turbidity

impairments in the Zumbro River watershed to correspond to storm events in the spring and summer months, when observed TSS and turbidity concentrations in the stream are highest. High flows deliver great amounts of TSS into the stream during storm events. Low flows concentrate TSS because the stream's assimilative capacity is being exceeded. Because the LDC approach establishes loads and load reductions based on a representative flow regime, it inherently considers critical conditions which are attributed to flow conditions. Therefore, the Zumbro River watershed turbidity TMDLs accounted for the critical conditions by using LDC to determine the load allocations needed for specific flow conditions.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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 non-point 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 non-point sources.

Comments:
Load Allocation: The load allocations are discussed in Section 3.3.3 of the TMDL submittal. MPCA determined available LAs by determining the loading capacity then subtracting the wasteload allocations and a margin of safety. The load allocation includes nonpoint pollution sources that are not subject to an NPDES permit as well as "natural background" sources such as wildlife. Tables 3-19 at the end of this document identify the load allocations associated with each flow regime. Although several nonpoint source types were identified in the TMDL, MPCA did not divide the LAs into subcategories or land use types. The State's modeling approach and assumptions made in determining load allocations as described in the TMDL Report are consistent with EPA guidance.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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.

Comments:
Tables 3-19 at the end of this document shows the overall WLAs for each segment. Table 20 below lists the individual WLAs for each facility in the Zumbro River watershed. The WLAs are discussed in Sections 3.3.1 and 3.4 and Appendix A of the TMDL submittal. In the Zumbro River watershed, TSS effluent limits are set at 30 mg/l for mechanical systems (i.e., wastewater treatment plants) and 45 mg/L for lagoon systems. For the permitted wastewater facilities, the WLA was determined by multiplying the permitted discharge volume by the TSS concentration effluent limit (either 30 mg/l or 45 mg/l). For cooling water discharge, the MPCA estimated a concentration of 5 mg/l.

Several MS4 jurisdictions are present in the watershed (Table 21 below). The WLAs for the MS4s were calculated based upon the percentage of land area covered by the MS4 permit. MPCA included the current urbanized area as well as the planned urban expansions under the 2020 City of Rochester Land Use Plan. The loads for the MS4 are based upon the instream TSS target and the urbanized land area percentage. The EPA notes that this approval applies only to those lands that contribute pollutants to the MS4s, the MS4 permit documents the specific land areas contributing the pollutants. MPCA identified 40 CAFOs in the watershed, identifying information is in Table 22 below. MPCA assigned a WLA = 0 for the production facilities.

The wasteload allocation for construction and industrial stormwater was determined based on percentage of land in the watershed requiring a NPDES permit. MPCA determined that less than 0.1% of the land area is covered by a construction or industrial stormwater NPDES permit, but assumed a land area of 0.1% to address any uncertainty.

As part of this decision, EPA is clarifying a statement from Section 5.0 of the TMDL that states that construction and industrial stormwater activities are considered "in compliance" with the TMDLs if they obtain a General Permit under the NPDES program, and remain in compliance with the permit. This decision does not address compliance with any NPDES permit or WLA. Compliance with any NPDES permit is a function of the appropriate NPDES program, and is not part of any TMDL approval.

For facilities on two waterbodies (Silver Creek; Unnamed Cr to Unnamed Cr AUID: 07040004-552 and Silver Creek; Unnamed Cr to Silver Lk S Fk Zumbro R. AUID: 07040004-553), the flows under the lowest flow regimes are extremely small. For these flow conditions for these

waterbodies, the WLA allocations are a formula rather than a load. The formula is the flow multiplied by the in-stream target for TSS (allocation = flow * TSS target of 67 mg/l).

Table 20 WLAs in the Zumbro River Watershed

Facility	**NPDES Permit #**	**Design flow mgd**	**TSS limit mg/L**	**WLA kg/day**
Kenyon WWTP	MN0021628	0.357	30	40.5
Zumbrota WWTP	MN0025330	1.11	30	126. 1
Bellechester WWTP (stabilization pond)	MN0022764	0.229**	45	39.0
Wanamingo WWTP	MNG550027	0.458	30	52.0
Pine Island WWTP	MN0024511	0.705	30	80.1
Mazeppa WWTP	MNG550015	0.0723	30	8.2
Hammond WWTP	MN0066940	0.023	30	2.6
Zumbro Falls WWTP (stabilization pond)	MN0051004	0.244**	45	41.6
Camp Victory WWTP	MN0067032	0.03	30	3.4
Kellogg WWTP (stabilization pond)	MNG580027	0.749**	45	127.5
Goodhue WWTP	MNG550005	0.099	30	11.2
West Concord WWTP	MN0025241	0.4732	30	53.7
Milestone Materials – Granger	MN0062791	2.3	30	261.2
Hayfield WWTP	MN0023612	0.41	45	69.8
Al-Corn Clean Fuel	MN0063002	0.19	30	21.6
Claremont WWTP	MN0022187	0.206	30	23.4
Dodge Center WWTP	MN0021016	0.973	30	110.5
Mantorville WWTP	MNG550013	0.232	30	26.3
Byron WWTP	MN0049239	1.4	30	159.0
Zumbro Ridge Estates Mobile Home Park	MN0038661	0.025	30	2.8
Hallmark Terrace, Inc. (stabilization pond)	MNG580070	0.166**	45	28.3
Milestone Materials - Goldberg	MN0062227	2.16	30	245.3
Kemps Milk Plant	MN0059803	0.105	--	2.0
Rochester Public Utilities - Silver Lake	MN0001139	88.6	***	***
Rochester WWTP / Water Reclamation	MN0024619	23.85	30	2708.5
Rochester Athletic Club	MN0062537	*	--	0.38
Kerry Bio-Science	MNG250047	0.06	--	1.14
Remediation System Pilot Testing	MNG790158	0.144	--	2.73
Seneca Foods Corp - Rochester	MN0000477	0.93	20	18.9
Kasson WWTP	MN0050725	0.968	30	109.9
AMPI Rochester - Cooling Water	MNG255051	0.64	--	12.1
Franklin Heating Station	MN0041271	1.364	--	2.8
Olmstead Waste to Energy Facility	MNG255076	0.025	--	0.5

* - indicates seasonal discharge

**– Permitted daily loading rates for these ponds were calculated by multiplying the average daily discharge volume, which is six inches of pond water depth, by the 45mg/L concentration limit. However, these ponds do not discharge continuously.

*** - for informational purposes only; the discharge is pass-through cooling and no load is added.

Table 21 MS4 Jurisdictions and Areal Extent in the Zumbro River Watershed

MS4 Jurisdiction	NPDES Permit Tracking #	Area (Square Miles)
Cascade Township	MS400071	4.16
Federal Medical Center	MS400175	0.17
Haverhill Township	MS400137	1.22
Marion Township	MS400145	3.18
Olmsted County	MS400064	0.85
Rochester Community & Technical College	MS400256	0.16
Rochester	MS400116	36.36
Rochester Township	MS400152	2.81
Right-of-Way **	MS400180	4.41
TOTAL		53.30

** Right-of-Way area includes State, County, and Local road and highway jurisdictions. Right-of-Way Permit # listed is for MN DOT Outstate District-Rochester

Table 22 CAFO facilities in the Zumbro River Watershed

Permit ID	Facility name	Permit ID	Facility name
	Grandview Hogs (Sow Unit)	MNG440945	Circle K Family Farms - Holst II Farm
MNG441115	Brian Herbst Farm Sec 2	MNG440044	Minnesota Family Farms - Sow Site 1
MNG441032	Jason Tebay Farm	MNG440031	Belvidere Group Partner - Merle
MNG440043	Toquam Hogs	MNG440030	Knott Farms
MNG441058	Langdon Farms - Blooming Prairie	MNG440428	Circle K Family Farms - Holst 1 Finishing
MNG440265	VZ Hogs LLP - Sow Site 1	MNG441119	Central Livestock Assn - Zumbrota Market
MNG440054	Grandview Hogs of Dodge Center LLP - Sow	MNG440787	Fieseler Farms
MNG440039	Jennie-O Turkey Store - Claremont Farm	MNG440042	Manco of FMT Inc
MNG440039	Jennie-O Turkey Store - Claremont West	MNG441101	Donley Farm Inc
MNG440646	Durst Bros Dairy - Site I	MNG440451	William Schmidt Farm 1
MNG441192	Kevin Hoebing Farm	MN0063517	Schoenfelder Farms LLP - Main Farm
MNG440449	Brian Edgar Farm - Sec 18	MNG440765	Nicholas Hanson Farm
MNG440445	Craig & Caryl Benedix Farm-Sec 10 Site 1	MNG440260	David C Johnson Farm Sec - 20
MNG440445	Craig & Carly Benedix Farm-Sec 4 Home	MNG440323	VanZuilen Enterprises
MNG440963	Richard Wolf Farm	MNG440575	Shane Wagner Farm South
MN0067911	Daley Brothers LLC	MNG440575	Shane Wagner Farm West
	Ripley Dairy LLP	MN0070025	Schumacher Farms of Elgin Inc
MNG441180	David Gosch Farm	MNG441062	Wayne Evers Farm
MNG440265	VZ Hogs LLP - North Finishers	MNG440504	McNallan Dairy
MNG441008	Luke Scherger	MNG440942	Mathew & Daniel Arendt Farm

During the development of the TMDL, MPCA and EPA discussed options for modifying the TMDL if new or expanding TSS dischargers were proposed in the watershed. MPCA permit regulations require effluent limits of 30 mg/l or 45 mg/l depending on the type of facility. These effluent limits are less than the in-stream water quality target for TSS (ranging from 48 mg/l to 92 mg/l). A study was conducted to determine the impacts of new or expanding dischargers on water quality. The results of this study (Cleland, 2011) demonstrate that the increased load of TSS will be offset by the increased flow, as long as the effluent limit is less than the in-stream target. Based upon this, MPCA and EPA developed procedures for modifying the TMDL if new or expanding dischargers are proposed.

1. A new or expanding discharger would file a permit modification request or an application for a permit reissuance with the MPCA permit program. The permit application information will include documentation of the current and proposed future flow volumes and TSS loads.

2. The MPCA permit program will notify the MPCA TMDL program upon receipt of the request/application, and provide the appropriate information, including the proposed discharge volumes and TSS loads.

3. TMDL program staff will provide the permit writer with information on the TMDL wasteload allocation to be published with the permit's public notice.

4. The supporting documentation (fact sheet, statement of basis, effluent limits summary sheet) for the proposed permit will include information about the TSS discharge requirements, noting that for TSS, the effluent limit is below the in-stream TSS target and the increased discharge will maintain the turbidity water quality standard. The public will have the opportunity to provide comments on the new proposed permit, including the TSS discharge and its relationship to the TMDL.

5. The MPCA TMDL program will notify the EPA TMDL program of the proposed action at the start of the public comment period. The MPCA permit program will provide the permit language with attached fact sheet (or other appropriate supporting documentation) and new TSS information to the MPCA TMDL program and the EPA TMDL program.

6. EPA will transmit any comments to the MPCA Permits and TMDL programs during the public comment period, typically via e-mail. MPCA will consider any comments provided by EPA and the public on the proposed permit action and wasteload allocation and respond accordingly, conferring with EPA if necessary.

7. If, following the review of comments, MPCA determines that the new or expanding TSS discharge, with a concentration below the in-stream target, is consistent with applicable water quality standards and the above analysis, MPCA will issue the permit with those conditions and send a copy of the final TSS information to the EPA TMDL program.

MPCA's final permit action, which has been through a public notice period, will constitute an update of the WLA.

8. EPA will document the revision in the administrative record for the TMDL. Through this process EPA will maintain an up-to-date record of the applicable WLA for permitted facilities in the watershed.

The State's modeling approach and assumptions made in determining load allocations as described in the TMDL Report are consistent with EPA guidance.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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.

Comments:
The MOS for these TMDLs is an explicit 10% of the loading capacity. MPCA determined that this MOS is appropriate because of the very close agreement between the paired turbidity and TSS samples (Appendix D of the TMDL). The statistical analysis of the data determined that the r^2 values were greater than 0.9, indicating the turbidity values and TSS values were very closely related. In addition, an implicit MOS is demonstrated by MPCA's assumption that the seasonal facilities (mainly pond systems) discharge on a daily basis. These systems are actually required by permit to discharge before June 15 or after September 15, when the water quality impacts are reduced. In addition, the wastewater treatment facilities are required by permit to discharge well below the instream target, allowing for assimilative capacity in the waterbodies. EPA agrees that these measures provide sufficient MOS such that water quality standards will be achieved.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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)).

Comments:
The load duration approach used in developing the TMDL for TSS inherently accounts for the full range of flow conditions over all seasons. The MPCA used long-term gages in the watershed to provide the baseline for several of the waterbodies, and installed several turbidity meters that gathered turbidity and flow data at short time intervals (15 -30 minute intervals). The long and short-term flow data were used to determine the appropriate flow curve to use in the development of the TMDLs. EPA has reviewed the procedure used by MPCA, and determined it is consistent with EPA guidelines (*An Approach for Using Load Duration Curves in the Development of TMDLs*, August 2007, EPA; *Draft Options for the Expression of Daily Loads in TMDLs*, June 2007, EPA).

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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.

Comments:
Section 6 of the TMDL describes several actions to assure achievement of the TMDLs. There is a Zumbro River Watershed Partnership formed in 2004. The Partnership has developed a "Zumbro River Watershed Management Plan" to direct watershed resources and activities in the watershed. This plan is scheduled to be revised in 2012. Several of the counties in the region have watershed management plans as well, such as Wabasha County. Each of these plans provides implementation actions and cost estimates for water quality improvement in the county. Monitoring efforts are also documented in these plans.

Clean Water Legacy Act (CWLA): The CWLA is a statute passed in Minnesota in 2006 for the purposes of protecting, restoring, and preserving Minnesota water. The CWLA provides the process to be used in Minnesota to develop TMDL implementation plans, which detail the restoration activities needed to achieve the allocations in the TMDL. The TMDL implementation plans are required by the State to obtain funding from the Clean Water Fund. The Act discusses how MPCA and the involved public agencies and private entities will coordinate efforts regarding land use, land management, water management, etc. Cooperation is also expected between agencies and other entities regarding planning efforts, and various local authorities and responsibilities. This would also include informal and formal agreements to jointly use technical educational, and financial resources. MPCA expects the implementation plans to be developed within a year of TMDL approval.

The CWLA also provides details on public and stakeholder participation, and how the funding will be used. The implementation plans are required to contain ranges of cost estimates for both point and nonpoint source load reductions, as well as monitoring efforts to determine effectiveness. MPCA has developed guidance on what is required in the implementation plans (Implementation Plan Review Combined Checklist and Comment, MPCA), which includes cost estimates, general timelines for implementation, and interim milestones and measures. The Minnesota Board of Soil and Water Resources administers the Clean Water Fund as well, and has developed a detailed grants policy explaining what is required to be eligible to receive Clean Water Fund money (FY '11 Clean Water Fund Competitive Grants Policy; Minnesota Board of Soil and Water Resources, 2011).

EPA finds that the TMDL document submitted by MPCA adequately addresses this eighth element.

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.

Comments:
Section 4 of the TMDL submittal discusses the monitoring efforts that will continue in the watershed. A detailed monitoring plan will be included in the implementation plan which will be completed within one year of approval of this TMDL. Several flow gages exist in the watershed as well as three long-term comprehensive monitoring sites. An intensive watershed monitoring effort is scheduled for 2012 in the watershed. This will include fish and macroinvertebrate samplings as well as water chemistry and flow monitoring at over 70 sites in the watershed. The

Zumbro River Watershed Partnership was recently awarded a Surface Water Monitoring Grant from MPCA to assist in data-gathering during the 2012-2013 calendar year.

EPA finds that the TMDL document submitted by MPCA adequately addresses this ninth element.

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:
General implementation strategies are discussed in Section 5 of the TMDL submittal. A detailed implementation plan will be developed within a year of approval of the TMDL submittal. The implementation plan will use the potential source assessment, potential erosion factors, land use, public input, and other sources of information to determine which implementation strategies will best reduce turbidity.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this tenth element.

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.

Comments:
Section 7 of the TMDL submittal discusses public participation. The Zumbro River TMDL process began with a "kickoff" meeting on February 8, 2007 in Rochester, Minnesota. MPCA

held a total of 29 stakeholder meetings between February 2007 and January 2010, 14 of which were open to the public. MPCA also sent out several e-mail updates during this time. A public meeting was held on January 26, 2010, and again on November 17, 2011. The TMDL was public noticed on MPCA's website. A public notice was posted in the State Register and the public comment period was open from October 24, 2011 through November 23, 2011. A copy of the mailing list for the public notice was provided by MPCA.

MPCA received five public comments on the draft TMDL. Most comments focused on the source assessment, and how more detail on sources and source contribution will lead to better implementation planning. MPCA provided copies of the responses to the commentors. MPCA addressed the comments, making revisions to the TMDL as needed, particularly on the monitoring section (Section 4 of the TMDL). EPA has reviewed the responses, and determined that they are appropriate. The detailed implementation plan currently under development will provide a more rigorous source assessment as well as details on specific locations and types of management practices needed to reduce sediment loads. In addition, the watershed is targeted for an intensive monitoring effort which will provide additional data on which to base the implementation plan.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of 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 water body, and the pollutant(s) of concern.

Comment:
The transmittal letter was dated February 7, 2012 from Rebecca J. Flood, Assistant Commissioner, MPCA, to Tinka Hyde, Water Division Director, Region 5 EPA. The letter stated that this was a final TMDL submittal under Section 303(d) of the CWA for the Zumbro River Watershed for turbidity.

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

13. Conclusion

After a full and complete review, EPA finds that the TMDLs for turbidity for the Zumbro Watershed satisfy all of the elements of an approvable TMDL. This approval document is for 17 waterbody segments impaired for turbidity (TSS) addressing 17 impairments from the 2010 Minnesota 303(d) list (Table 1 above). EPA's approval of this document 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 CWA Section 303(d) for those waters.

Table 3 TMDL Summary for Silver Creek 07040004-552 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	11.35	4.75	1.74	0.44	<0.001
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.001	<0.001	<0.001	<0.001	**
Communities Subject to MS4 NPDES Requirements	0.70	0.29	0.11	0.03	**
Construction and Industrial Stormwater	0.01	0.004	0.002	<0.001	**
Load Allocation	9.50	3.97	1.46	0.37	**
Margin of Safety	1.13	0.47	0.17	0.04	Implicit
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.1%	<0.1%	<0.1%	0.1%	**
Communities Subject to MS4 NPDES Requirements	6.2%	6.2%	6.2%	6.2%	**
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	**
Load Allocation	84%	84%	84%	84%	**
Margin of Safety	10%	10%	10%	10%	Implicit

* The facility is listed in Appendix A.

** See Section 3.3 for allocations for these specific categories in this flow zone.

Table 4 TMDL Summary for Silver Creek 07040004-553 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	12.45	5.21	1.91	0.49	<0.001
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.001	<0.001	<0.001	<0.001	**
Communities Subject to MS4 NPDES Requirements	1.40	0.59	0.21	0.05	**
Construction and Industrial Stormwater	0.01	0.005	0.002	0.0004	**
Load Allocation	9.80	4.10	1.50	0.38	**
Margin of Safety	1.25	0.52	0.19	0.05	Implicit
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.1%	<0.1%	<0.1%	0.11%	**
Communities Subject to MS4 NPDES Requirements	11.2%	11.2%	11.2%	11.2%	**
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	**
Load Allocation	79%	79%	79%	79%	**
Margin of Safety	10%	10%	10%	10%	Implicit

* The facility is listed in Appendix A.

** See Section 3.3 for allocations for these specific categories in this flow zone.

Table 5 TMDL Summary for Bear Creek 07040004-556 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	2.78	1.50	0.77	0.35	0.22
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.003	0.001	0.001	0.0003	0.0002
Load Allocation	2.50	1.35	0.69	0.32	0.19
Margin of Safety	0.28	0.15	0.08	0.04	0.02
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	90%	90%	90%	90%	90%
Margin of Safety	10%	10%	10%	10%	10%

Table 6 TMDL summary for Bear Creek 07040004-539 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	29.35	15.83	8.15	3.71	2.27
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	2.00	1.08	0.56	0.25	0.15
Construction and Industrial Stormwater	0.03	0.01	0.007	0.003	0.002
Load Allocation	24.39	13.15	6.78	3.08	1.89
Margin of Safety	2.93	1.58	0.82	0.37	0.23
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	6.8%	6.8%	6.8%	6.8%	6.8%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	83%	83%	83%	83%	83%
Margin of Safety	10%	10%	10%	10%	10%

Table 7 TMDL Summary for Willow Creek 07040004-540 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	18.11	9.77	5.03	2.29	1.40
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.02	0.02	0.02	0.02	0.02
Communities Subject to MS4 NPDES Requirements	5.17	2.79	1.43	0.65	0.39
Construction and Industrial Stormwater	0.02	0.01	0.005	0.002	0.001
Load Allocation	11.09	5.98	3.07	1.39	0.85
Margin of Safety	1.81	0.98	0.50	0.23	0.14
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.1%	0.2%	0.4%	0.9%	1.5%
Communities Subject to MS4 NPDES Requirements	28.6%	28.5%	28.5%	28.3%	28.1%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	61%	61%	61%	61%	60%
Margin of Safety	10%	10%	10%	10%	10%

* The facility is listed in Appendix A.

Table 8 TMDL Summary for Bear Creek 07040004-538 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	50.37	27.17	13.99	6.37	3.90
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.02	0.02	0.02	0.02	0.02
Communities Subject to MS4 NPDES Requirements	9.48	5.11	2.63	1.20	0.73
Construction and Industrial Stormwater	0.05	0.02	0.013	0.006	0.003
Load Allocation	35.79	19.30	9.93	4.51	2.76
Margin of Safety	5.04	2.72	1.40	0.64	0.39
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.1%	<0.1%	0.1%	0.3%	1%
Communities Subject to MS4 NPDES Requirements	18.8%	18.8%	18.8%	18.8%	18.7%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	71%	71%	71%	71%	71%
Margin of Safety	10%	10%	10%	10%	10%

* The facility is listed in Appendix A.

Table 9 TMDL Summary for Zumbro River, South Fork 07040004-536 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	128.04	53.48	25.98	9.18	3.43
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.04	0.04	0.04	0.04	0.04
Communities Subject to MS4 NPDES Requirements	4.95	2.07	1.00	0.35	0.13
Construction and Industrial Stormwater	0.12	0.05	0.023	0.008	0.003
Load Allocation	110.12	45.98	22.31	7.86	2.91
Margin of Safety	12.80	5.35	2.60	0.92	0.34
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.1%	<0.1%	0.2%	0.4%	1%
Communities Subject to MS4 NPDES Requirements	3.9%	3.9%	3.9%	3.8%	3.8%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	86%	86%	86%	86%	85%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 10 TMDL Summary for Cascade Creek 07040004-639 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	7.93	4.17	1.95	0.81	0.33
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	0.58	0.30	0.14	0.06	0.02
Construction and Industrial Stormwater	0.01	0.004	0.002	0.001	0.0003
Load Allocation	6.55	3.44	1.61	0.67	0.27
Margin of Safety	0.79	0.42	0.20	0.08	0.03
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	7.3%	7.3%	7.3%	7.3%	7.3%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	83%	83%	83%	83%	83%
Margin of Safety	10%	10%	10%	10%	10%

Table 11 TMDL Summary for Cascade Creek 07040004-581 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	15.19	7.99	3.74	1.55	0.63
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.005	0.005	0.005	0.005	0.005
Communities Subject to MS4 NPDES Requirements	3.29	1.73	0.81	0.33	0.14
Construction and Industrial Stormwater	0.01	0.01	0.003	0.001	0.001
Load Allocation	10.37	5.45	2.55	1.05	0.43
Margin of Safety	1.52	0.80	0.37	0.15	0.06
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	<0.1%	<0.1%	0.1%	0.3%	0.7%
Communities Subject to MS4 NPDES Requirements	21.6%	21.6%	21.6%	21.6%	21.5%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	68%	68%	68%	68%	68%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 12 TMDL Summary for Kings Run 07040004-601 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	7.35	3.04	1.30	0.72	0.48
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	3.97	1.64	0.70	0.39	0.26
Construction and Industrial Stormwater	0.01	0.003	0.001	0.001	0.0004
Load Allocation	2.63	1.09	0.47	0.26	0.17
Margin of Safety	0.73	0.30	0.13	0.07	0.05
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	54.1%	54.1%	54.1%	54.1%	54.1%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	36%	36%	36%	36%	36%
Margin of Safety	10%	10%	10%	10%	10%

Table 13 TMDL Summary for Zumbro River, South Fork 07040004-507 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	192.42	79.57	34.04	18.72	12.55
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	5.21	5.21	5.21	5.21	5.21
Communities Subject to MS4 NPDES Requirements	26.17	10.34	3.96	1.81	0.95
Construction and Industrial Stormwater	0.17	0.07	0.025	0.012	0.006
Load Allocation	141.63	55.99	21.44	9.81	5.13
Margin of Safety	19.24	7.96	3.40	1.87	1.26
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	3%	7%	15%	28%	42%
Communities Subject to MS4 NPDES Requirements	13.6%	13.0%	11.6%	9.7%	7.6%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.06%	0.05%
Load Allocation	74%	70%	63%	52%	41%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 14 TMDL Summary for Dodge Center Creek 07040004-592 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	59.34	10.98	4.62	2.73	2.16
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.25	0.25	0.25	0.25	0.25
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.05	0.01	0.004	0.002	0.002
Load Allocation	53.10	9.63	3.90	2.21	1.69
Margin of Safety	5.93	1.10	0.46	0.27	0.22
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.4%	2%	5%	9%	12%
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.08%	0.1%
Load Allocation	89%	88%	85%	81%	78%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 15 TMDL Summary for Zumbro River, Middle Fk S. Branch 07040004-526

(TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	27.51	5.09	2.14	1.27	1.00
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.02	0.005	0.002	0.001	0.001
Load Allocation	24.74	4.58	1.92	1.14	0.90
Margin of Safety	2.75	0.51	0.21	0.13	0.10
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	90%	90%	90%	90%	90%
Margin of Safety	10%	10%	10%	10%	10%

Table 16 TMDL Summary for Zumbro River, Middle Fk S. Branch Middle 07040004-525 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	143.60	26.57	11.17	6.61	5.23
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	0.57	0.57	0.57	0.57	0.57
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.13	0.02	0.009	0.005	0.004
Load Allocation	128.53	23.32	9.47	5.37	4.13
Margin of Safety	14.36	2.66	1.12	0.66	0.52
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	0.4%	2%	5%	9%	11%
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.08%	0.1%
Load Allocation	90%	88%	85%	81%	79%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 17 TMDL Summary for Milliken Creek 07040004-554 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	17.39	5.11	1.44	0.31	0.13
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.02	0.005	0.001	0.0003	0.0001
Load Allocation	15.64	4.60	1.29	0.27	0.11
Margin of Safety	1.74	0.51	0.14	0.03	0.01
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities	NA	NA	NA	NA	NA
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	90%	90%	90%	90%	90%
Margin of Safety	10%	10%	10%	10%	10%

Table 18 TMDL Summary for Zumbro River, Middle Fork 07040004-522 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	77.03	22.83	7.38	3.89	3.09
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.35	0.35	0.35	0.35	0.35
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.07	0.02	0.006	0.003	0.002
Load Allocation	68.91	20.18	6.29	3.15	2.43
Margin of Safety	7.70	2.28	0.74	0.39	0.31
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	0.5%	2%	5%	9%	11%
Communities Subject to MS4 NPDES Requirements	NA	NA	NA	NA	NA
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.08%	0.1%
Load Allocation	89%	88%	85%	81%	79%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.

Table 19 TMDL Summary for Zumbro River 07040004-501 (TSS in tons/day)

	Flow Zone				
	High	Moist	Mid	Dry	Low
	Tons/day				
TOTAL DAILY LOADING CAPACITY	785.57	334.55	219.07	158.11	134.56
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	6.72	6.72	6.72	6.72	6.72
Communities Subject to MS4 NPDES Requirements	26.51	11.15	7.21	5.13	4.33
Construction and Industrial Stormwater	0.70	0.29	0.190	0.136	0.114
Load Allocation	673.08	282.94	183.04	130.31	109.94
Margin of Safety	78.56	33.45	21.91	15.81	13.46
	Percent of total daily loading capacity				
TOTAL DAILY LOADING CAPACITY	100%	100%	100%	100%	100%
Wasteload Allocation					
Permitted Wastewater Treatment Facilities*	1%	2%	3%	4%	5%
Communities Subject to MS4 NPDES Requirements	3.4%	3.3%	3.3%	3.2%	3.2%
Construction and Industrial Stormwater	0.1%	0.1%	0.1%	0.09%	0.1%
Load Allocation	86%	85%	84%	82%	82%
Margin of Safety	10%	10%	10%	10%	10%

* The facilities are listed in Appendix A.