Minnesota Cities Stormwater Coalition

Municipal stormwater professionals working together for clean water

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May 29, 2012

Dear Mr. Finley:

The League of Minnesota Cities and its Minnesota Cities Stormwater Coalition (collectively referred to as LMC) submit these Public Comments and this Petition for Contested Case Hearing in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

The comments listed below are intended to be the LMC's Written Comments (as per the Public Notice) and the basis (reasons or proposed findings) for the LMC's Petition of Contested Case Hearing.

Statement of Interest

LMC's membership includes almost all municipalities located in Minnesota. Many of these cities are in the drainage area for this TMDL. In addition, certain of the LMC's members with a special interest in stormwater matters have coordinated under the auspices of the LMC to form the Minnesota Cities Stormwater Coalition (MCSC). Many of the member cities of MCSC are in the drainage area for this TMDL and, thus, are directly affected by its findings.

Relief Requested in Contested Case Hearing Proceeding

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities

are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs

- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   <u>Statement of Action #2</u>

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

<u>Reasons or Proposed Findings #4</u>

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

   Reasons or Proposed Findings #5

   The boundaries for the permitted cities are flawed in at least three significant ways:
   - The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.

- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   <u>Statement of Action #6</u>

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the

differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

Reasons or Proposed Findings #6

It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for “nested” TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this

TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
    - In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has

occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They are differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86^{th} percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL

- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many

urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
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> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until

after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

    Reasons or Proposed Findings #17

    The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?

- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

LMC asks that the MPCA take the requested actions set forth in this submittal. LMC further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report. Finally, LMC respectfully requests that MPCA hold a contested case hearing to understand and address the serious issues raised in this submittal.

Thank you for the opportunity to submit these comments and this contested case hearing petition.

Jim Hafner
Chair, Steering Committee
Minnesota Cities Stormwater Coalition

Randy Neprash, P.E.
Staff
on behalf of League of Minnesota Cities & Minnesota Cities Stormwater Steering Committee

c: Craig Johnson, League of Minnesota Cities
Commissioner John Linc Stine, MPCA
Brian Bensen, MPCA Citizens' Board
Daniel Foley, MPCA Citizens' Board
Eric Gustafson, MPCA Citizens' Board
Dennis Jensen, MPCA Citizens' Board

David Newman, MPCA Citizens' Board
Mary Riley, MPCA Citizens' Board
Donald Schiefelbein, MPCA Citizens' Board
Chester Wilander, MPCA Citizens' Board

FLAHERTY | HOOD P.A.

May 29, 2012

Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

BY E-MAIL AND U.S. MAIL
robert.finley@state.mn.us

Re: Draft South Metro Mississippi River Turbidity Total Maximum Daily Load (TMDL) Report
Comments of Municipal Groups and Cities located on Minnesota River

Dear Mr. Finley:

Thank you for the opportunity to offer the following comments on the draft the draft South Metro Mississippi River turbidity TMDL report. I am submitting the collective comments of the following coalition of city organizations as well as individual cities located along the Minnesota River who will be impacted by this TMDL. The comments contained in the attached document, Evaluation of the Regulatory and Scientific Concerns Regarding the Adoption of Turbidity and TSS TMDLs For The Minnesota And Mississippi Rivers, were prepared by John Hall, Hall & Associates, on behalf of the following cities and city organizations:

- League of Minnesota Cities, an organization of 803 out of the 853 cities in Minnesota including most cities located along the Minnesota River and the South Metro portion of the Mississippi River;
- Coalition of Greater Minnesota Cities, an organization of approximately 77 cities located throughout the state of Minnesota including numerous cities located along the Minnesota and Mississippi River;
- Minnesota Cities Stormwater Coalition, a member-based city organization that provides help to cities in implementing various federal and state stormwater requirements and which represents many of the cities located along the Minnesota River;
- City of Fairmont
- City of Mankato;
- City of Marshall;
- City of New Ulm
- City of North Mankato;
- City of Redwood Falls;
- City of St. Cloud; and
- City of Waseca.

Similar comments are being submitted on the Minnesota River TMDL, and many of our identified concerns cut across both TMDLs.

Written responses to the foregoing may be directed to my attention at 525 Park Street, Saint Paul, MN 55105. I can also be reached by phone at 651-259-1924 or by e-mail at eawefel@flaherty-hood.com. Thank you for your time and attention.

Yours Truly,

Elizabeth Wefel
Coalition of Greater MN Cities, Staff Lobbyist/Attorney

cc (via email):

Craig Johnson, League of Minnesota Cities
Randy Neprash, Minnesota Cities Stormwater Coalition
Butch Hybbert, City of Fairmont
Troy Nemmers, City of Fairmont
Mary Fralish, City of Mankato
Patrick Hentges, City of Mankato
Mark Knoff, City of Mankato
Ben Martig, City of Marshall
Scott Truedson, City of Marshall
Bob Van Moer, City of Marshall
Tom Stough, City of New Ulm
Wendell Sande, City of North Mankato
Keith Muetzel, City of Redwood Falls
Patrick Shea, City of St. Cloud
Tracy Hodel, City of St. Cloud
Crystal Prentice, City of Waseca
Carl Sonnenberg, City of Waseca
Timothy Flaherty, Flaherty & Hood
Steven Nyhus, Flaherty & Hood
John C. Hall, Hall & Associates

EVALUATION OF THE REGULATORY AND SCIENTIFIC CONCERNS REGARDING THE ADOPTION OF TURBIDITY AND TSS TMDLS FOR THE MINNESOTA AND MISSISSIPPI RIVERS

By:

JOHN C. HALL
HALL & ASSOCIATES
CENTER FOR WATER QUALITY MODELING EXCELLENCE

May 29, 2012

I. BACKGROUND

The Minnesota River (and to a lesser extent the Mississippi River) has long been recognized as containing elevated sediment loading, due primarily to land development, bank erosion and agricultural practices in these basins. The elevated sediment load causes decreased light penetration that can have a number of adverse ecological effects. Excess sediments may impact water supply usage, swimming, stream habitat, rooted aquatic plant growth and the aesthetic enjoyment of a water body. Sediments can accumulate over time in lakes and reservoirs lessening the useful life of those water bodies. Increased nutrient loadings are often transported along with sediments, particularly when the runoff is agricultural in nature. The applicable water quality standard for turbidity in class 2B waters is 25 Nephelometric Turbidity Units (NTUs). This is a measure of water clarity that is affected by sediment load and other factors (e.g., algal growth, color, and other dissolved constituents in the water).

The Minnesota Pollution Control Agency (MPCA) has completed two draft Total Maximum Daily Loads (TMDLs) to ensure compliance with the applicable state standards: the "South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load" (February 2012) and the "Minnesota River Turbidity Total Maximum Daily Load" (February 2012). As noted in the MN River TMDL Fact Sheet, 80-90% of the sediment load to the Mississippi River above Lake Pepin is from the MN River. Both of these TMDL reports impose significant load reductions on point sources (municipal separate storm sewer system (MS4) communities), non-point sources and the natural erosional features in the basin. The major sources are both natural (bluffs, stream bank erosion) and man-made (primarily agricultural). Urban stormwater is noted as a "minor" source – (MN TMDL @ 13). MPCA further states:

> Land use practices that reduce the amount of sediment and nutrients entering lakes and streams are necessary to reduce turbidity. Riparian (streambank, lakeshore) buffers, stream bank stabilization, water storage, surface tile intake buffers or replacements, and crop residue management, all help reduce sediment transport. On farmland, conservation tillage and increased crop diversity, including pasture, can reduce sediment loss. In cities and developing areas, stormwater management and construction of erosion control help prevent sediment runoff. On a basin scale such as this, ***virtually every type of best management practice involving all types of land use will be necessary***. (Emphasis supplied)

Such controls will cost many billions of dollars in the Minnesota River and the Mississippi River basins. It will easily take decades to implement such wide scale and all-encompassing runoff controls, if practicable.

Given the stringency of the reductions it is not apparent that the standards will ever be achieved, which, as discussed further herein, creates major regulatory hurdles for future economic growth throughout the effected watersheds and elsewhere in the state.

While the TMDLs attempt to provide a level of certainty on future growth, federal law could be (and in other locals has been) interpreted to prevent or severely restrict any growth that could contribute to runoff, pending attainment of these daunting TMDL goals. Finally, there are simply no authorities under either state or federal law to control conditions that are typically considered "natural." Moreover, as agricultural sources are primary sediment contributors and there are no federal vehicles to regulate farming operations, attainment of the applicable water quality standards (WQS) may never occur. Given these realities, and assuming that the proposed TMDL mandates are reasonable and appropriate, options to avoid unintended or unnecessary economic impacts of these TMDLs on local communities are reviewed. The purpose of this White Paper is to review the regulatory ramifications of adopting both proposed TMDLs and the related criteria as suggested by the MPCA.

A. GUIDANCE ON CRITERIA DERIVATION

Because site-specific and surrogate criteria are being applied to derive the sediment TMDLs, the following discussion of criteria derivation and application principles is provided as background to the MPCA's proposed action.

The *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (USEPA, January 1985) (hereafter the "*Guidelines*") are EPA's basic procedures for setting water quality criteria, which identify acceptable data, methods for deriving the criteria, and the basic objectives of the criteria. State rules indicate that Minnesota water quality criteria are derived in accordance with the *Guidelines.*[1] As noted in the *Guidelines*, the purpose of water quality criteria is to establish the level of water quality "necessary for the protection and propagation of shellfish, fish, and wildlife…." (*See,* CWA Section 304(a); *accord* 40 CFR Part 131.2). Section 304(a) criteria are required to "accurately reflect the latest scientific knowledge…" regarding the pollutant of concern. *Id.*

The *Guidelines* specify that criteria must be applied in the manner in which they were derived to avoid over- or under-regulation.

> Criteria must be used in a manner that is consistent with the way in which they were derived if the intended level of protection is to be provided in the real world. Although derivation of water quality criteria for aquatic life is constrained by the ways toxicity and bioconcentration tests are usually conducted, there still are many different ways that criteria can be derived, expressed and used. The means used to derive and state criteria should relate, in the best possible way, the kinds of data that are available concerning toxicity and bioconcentration and the ways

[1] *See e.g.* Minn. Stat. § 116.07, Minn. R. 7050.0218, and Minn. R. 7053.0225.

> criteria can be used to protect aquatic organisms and their uses.

Guidelines @ 7.

> All necessary decisions should be based upon a thorough knowledge of aquatic toxicology and an understanding of these Guidelines and should be consistent with the spirit of the Guidelines, *i.e.,* to make best use of the available data to derive the most appropriate criteria. These National Guidelines should be modified whenever sound scientific evidence indicate that a national criterion produced using the Guidelines would probably be substantially over-protective or underprotective of the aquatic organisms and their uses on a national basis.

Guidelines @ 18.

The *Guidelines* are clear that relevant factors relating to the manner in which aquatic life impairment may occur must be considered and reflected in the criteria. (*Guidelines* @ 32, 43.) The likelihood of continuous exposure to a pollutant is assumed in criteria derivation because, in most instances, criteria are applied to pollutant sources that discharge on a continuous basis. The *Guidelines* express a preference for setting chronic criteria as a four-day average and acute criteria as a one-hour average, not to be exceeded more frequently that once in three years. These general recommendations for expressing criteria, however, are changed where the data used to develop the criteria justify a different approach or the relevant environmental exposure conditions are more complex.

For example, the *Guidelines* indicate that alternative methods for expressing chronic criteria are acceptable for circumstances where exposures would not be continuous. In such cases, the continuous exposure criteria could be adjusted to apply to shorter periods "if the total exposure would not cause any more adverse effect than the continuous exposure would cause." (*Guidelines* @ 9.) This approach was used with ammonia, where both thirty-day and four-day instream chronic objectives were set as well as seasonal criteria depending upon life stages of the sensitive species present. The marine dissolved oxygen (D.O.) criteria set up a complex equation to account for time varying exposures associated with transient low-D.O. conditions prevalent in marine waters.

EPA has also acknowledged that the appropriate frequency of exposure component of the criteria should relate to the expected recovery period. (*Guidelines* @ 11, 12.) Normally, the criteria assume that sensitive organisms may need a substantial period to recover from exposures above the chronic level (*e.g.,* three years for fishes). Where the most likely impacts are short term and reversible, the *Guidelines* would support allowing more frequent exposures at or above the criteria levels if this would not leave the water body in a continuous state of recovery. In summary, the *Guidelines* provide significant flexibility to structure chronic criteria to appropriately protect uses under real world conditions. In

fact, the *Guidelines* require EPA to modify its approach to criteria development where it is apparent that the criteria will lead to over- or under-protection.

1. Relevance of Criteria Application Consideration to the Proposed TMDLs

The Mississippi River (MS) TMDL replaces the existing NTU criteria with a proposed long term average total suspended solids (TSS) criteria to protect submerged aquatic vegetation (SAV) at a median concentration, while the MN River TMDL converts the same "never to exceed" NTU criteria to "never to exceed" TSS criteria. The proposed site-specific TSS standard applicable to the South Metro Mississippi River will be 32 mg/l (summer average) over a multiyear period. This standard will apply generally at Lock and Dam 2 (Hastings) and Lock and Dam 3 (near Red Wing). (MS TMDL Summary) Attainment of this standard will allow for improvements in SAV growth. The existing long term average TSS level in the vicinity of this area is 47 mg/l, which does not allow sufficient light penetration to support SAV growth. Thus, a long term average system wide load reduction on the order of 35% is required to attain this objective.

The Minnesota River (MN) TMDL, however, is based on the existing turbidity standard, converted to TSS using a simple linear regression. (MN TMDL @ 16) The TSS levels predicted from the various regressions were: 75-100 mg/l - Minnesota River (main stem); 90 mg/l – Blue Earth, Le Sueur and Watonwan; 70 mg/l – Redwood and Cottonwood; and 50 mg/l – Yellow Medicine, Hawk and Chippewa. The reason for the wide range in acceptable TSS level for a given NTU target is evaluated in this assessment. Based on the application of the NTU standard in the TMDL evaluation, it appears that it is applied as a "not to exceed value" which actually makes the value far more restrictive than the criteria applied to the MS TMDL. (MN TMDL @ 15 and Figure 6.11 @ 175) *It appears to produce a long term median TSS level in the range of 5-7 mg/l.* It is not apparent that this is a scientifically defensible interpretation or result given that the endpoint to protect for either case should be protection of SAV growth.

The MS TMDL notes that plants may endure extended periods of elevated turbidity and still "flourish." (MS TMDL @ 62). The critical season for plant growth is noted to be June-September. This is not the "high flow" period that generally occurs April and May. *Id.* Based on this description, it is uncertain what the rationale is for mandating load reductions under all flow conditions, as implied by both TMDLs, or to winter flow conditions when submerged plant growth is not considered impacted.

The existing NTU criteria are based on very limited and dated analyses. Like many early criteria, they are expressed as "not to exceed" values because they do not fully reflect the updated science associated with proper criteria derivation. The "not to exceed" interpretation would essentially classify these criteria as fast acting "acute" criteria. The underlying science, however, certainly does not support such an interpretation or application to protect aquatic life uses. Applying the criteria under a continuous, not to exceed assumption produces restrictions on sediment that are far more onerous than necessary to protect stream uses. The 32 mg/l, multiyear criteria for the Mississippi River to protect SAV is significantly less restrictive than even a 100 mg/l "not to exceed"

value and is far less restrictive than MN River surrogate TSS criteria in the 50-75 mg/l range. It appears that the ration between long term average and peak day conditions is on the order of a factor of 10-20. It is not apparent that protection of water quality and stream uses in the MN River requires a more restrictive application of the same criteria.

The difference in criteria averaging period is apparently what is driving the highly restrictive conclusions for the MN River TMDL. Consistent with the actions on the MS TMDL, the application of the NTU criteria for the MN River needs to be appropriately structured for the main concern at issue – plant growth. A long term average TSS water quality criterion should be developed to replace the "never to exceed" NTU criteria. The MPCA has been working on a new TSS standard. In the MN TMDL, they indicate that "The estimate of land use change needed to meet water quality goals is based on Minnesota's current water quality standard for turbidity. Changes to the standard will soon be proposed." (MN TMDL @ 194). In light of the problems in the "never to exceed" standard used for this TMDL, it may be more appropriate to insist that the TMDL be delayed until the new TSS standard is complete.

II. OVERVIEW OF THE TMDL REQUIREMENTS

A. MN TMDL Reduction Requirements to Achieve Applicable Standards

1. TMDL Allocation Evaluation

Individual TMDL allocations were set for each major contributing watershed in the Minnesota River. The MN TMDL was based on meeting the surrogate TSS objective under all flow conditions (i.e., TSS was applied like a "daily maximum" criteria). This was accomplished by using the "duration curve" method based on stream flows occurring from 1976- 2006. As noted earlier, it is not apparent that application of the criteria in this fashion is scientifically defensible in that long term average growth of SAV. MS4 wasteload allocations (WLAs) were based on a 50 lbs./acre/year for "built up areas." This appears to impose a 90% reduction on MS4 and other "non-point" contributions given the modeling assumptions used for existing conditions. This is not known to be a physically attainable level of reduction.

2. MN River Sub-watershed Reduction Requirements

For the Yellow Medicine River, the primary exceedance of the surrogate TSS standard appears to occur primarily under "very high flows." (MN TMDL @ 27, Figure 5.2) It is not apparent how this can be possibly controlled. Floods, and the sediment loads they carry, are natural events that are often considered "Acts of God." There is no physical way to retain or reduce such flows when they cover saturated ground and scour the landscape. Reducing runoff under more controllable conditions (i.e., shorter duration and less intense rainfall events) would allow for substantial improvement in water clarity that may be able to achieve the applicable standard on a median basis. This does not require

regulation or control of extreme flow events, which is impossible. "Developed" land accounts for 7.9% of the watershed, however, there are no MS4 communities in this watershed.[2] Consequently, it is not apparent from this TMDL publication what degree of reduction or BMP type this allocation is related to, or the equity of providing such a WLA given the acknowledgement that the stormwater loading are a "minor" component of the current TSS load to these systems. Given the small contributing area it would seem that any approach that imposed highly restrictive BMP requirements would not be cost effective or objectively necessary to ensure attainment of the TMDL objectives. The analysis for the Chippewa was quite similar.

MS4 loadings for the many of watersheds vary by "streamflow". (MN TMDL Table 5.4 – Hawk Creek). Thus a lower load is allowed when the flow in the stream is low. This could impose extreme BMP requirements since the size of a storm is not directly related to stream flow. A localized thunderstorm may induce high rainfall even though the stream flow is low, while other high flow conditions in a river may be due to upstream rainfall or snowmelt. This does not produce greater runoff in downstream locations, while other natural conditions influencing TSS level may be affected (e.g., bank erosion, gully erosion). It is not apparent that the load limitations have any direct relationship to the type of storms that can produce high or low runoff. This will create a confused and possibly impossible compliance condition for all land use types and MS4 communities.

The duration load curve for the Redwood River provides a good example of the problems associated with TMDL the load allocation structure. MN River TMDL Figure 5.21 – @ 59). The extreme flows are plainly the most frequent condition when load targets are exceeded. The Cottonwood and Blue Earth Rivers show similar results. MN TMDL Figure 5.26, @ 67; Figure 5.31 @ 77, respectively. The mid and lower flows have some infrequent exceedances, but median conditions meet the water quality objective. The need for significant controls during these conditions is not apparent. It is likely that some reduction of storm runoff would significantly improve water quality; however, the ability to address extreme flow conditions is not apparent and there is certainly no reason to mandate extreme BMP measures for seasons when average to lower stream flows occur. However, the structure of the load limits will require extensive controls to address single day extreme rainfall events for all conditions.

It is interesting that the pattern of non-compliance with the load duration curve is similar for watersheds with and without any significant MS4 communities. This would imply the obvious – increased stream bank erosion, transport of historically contributed sediments and runoff from farm areas during high and very high flow events is controlling water quality throughout these subwatersheds and MS4 inputs are negligible.

[2] "Developed" land includes unregulated cities & small towns, rural residences, and roads (MN TMDL @ 6).

3. Mainstem Minnesota River

Little data is presented showing compliance status for the north western sections of the mainstem of the Minnesota River. In most cases the Load Duration curve is presented without data on previously monitored conditions. (See, MN TMDL @ 104 (to Montevideo), 112 (to Hazel Creek), 119 (to Redwood River). The load duration curve downstream of Mankato shows that compliance with the TSS target is only achieved for lower flows. (MN TMDL @ 126). The curve for Jordon shows a similar pattern. (MN TMDL @ 161) This is not surprising as the effect of higher flow loadings would become attenuated and more distributed as one travels downstream. At median flow conditions, MS4 discharges are provided with 0.3% of the TMDL and a value 12 times less than the wastewater facilities that are presumably discharging at very low TSS levels (5 - 10 mg/l TSS) because of total phosphorus (TP) limitations applicable throughout the basin. It is not apparent how MS4 communities could comply with the wasteload allocations applicable to the lower flow conditions that are reduced under lower flow conditions. As noted earlier these all basically negligible sources have no material impact on water quality during higher flow conditions.

The data presented for Jordan (MN TMDL Figure 5.85@ 126) underscores the scope of reductions that are necessary under the WQS interpretation employed for this TMDL. At very high and high river flows, approximately an 80-90% reduction will be required. It is unlikely that such reductions are physically possible, particularly as all natural sources are considered part of the controllable loading, which is not reasonable. Assuming that the "natural" load (bank erosion, some bed load, bluff erosion) cannot be controlled the complete elimination of farming in the basin may be required to attain the TMDL targets. As noted earlier, the reduced allowable MS4 loads for low and very low stream flows may require extreme BMPs because MS4 loads are not a function of stream flow, they are a function of rainfall. Finally, it is not apparent why the TMDL assumes elevated TSS loadings (secondary treatment) are actually discharged from wastewater facilities. Most facilities employing chemical TP reduction are producing TSS discharges in the 5-10 mg/l range. This part of the WLA load could be "shared" or "banked" to allow increased MS4 loads given the apparent overall negligible nature of this load source. Such an approach could apply when assessing the efficacy of alternative BMP programs as allowed under the TMDLs.

4. Costs

The estimated costs for the non-point source BMP program sufficient to meet the WQS expressed as daily maximum requirement is $3-6.75 billion and $175 million for MS4 improvements. MN TMDL @ 193. It is further noted that the TMDL requirements may change if the WQS is updated or modified. It would seem that given the (1) massive investment required, (2) the unattainable nature of the proposed TMDL, and (3) the likely fact that the results are not even ecologically necessary, this TMDL should be reconsidered pending a revision of the outdated NTU standard. The MS4 component of the MN River loading has been reported to be 0.4% of the overall TSS loading. This would indicate that the cost per pound of reduction is about ten to forty times the cost of

non-municipal sources. Put differently, if municipal entities paid 1/10th the projected cost to offset their entire load via non-point source reductions they would accomplish far more benefit than implementing MS4 improvements. Some thought to alternative programs should also be considered.

B. MS TMDL Reduction Requirements to Achieve Applicable Standards

The area subject to the MS TMDL encompasses almost 50,000 square miles in four main watersheds: Minnesota, Upper Mississippi, Cannon, and St. Croix. To attain the TMDL objectives the majority of the load reductions need to be attained in the Minnesota River basin, although all MS4 communities in both basins will be required to implement extensive best management practices to reduce inputs. The projected load reduction is not plainly discussed in this TMDL, nor is the relative contribution of the MS4 communities. It appears that overall reductions from all sources are recommended in the range of 35%.

1. TMDL Allocation Evaluation

The MS River TMDL uses a similar "load duration" approach and establishes load reduction targets for five flow conditions. (MS TMDL @ 50-54) A much greater share of the loading capacity (approximately 15% at high flow and 27% at low flow) is apportioned to point sources (including MS4 communities). This is a much higher point source apportionment than the MN River analysis and we expect that it is a result of size of the Metro area included within the TMDL. Moreover, the point source allocation is reduced far less under low flow conditions. The overall projected load reduction for the MN River basin is 50-60 percent while other tributaries to the MS River are projected to require a 20% reduction. (MS TMDL @ 2). The MN River basin contributes the majority of the TSS loading to this system (74%) and the primary factor influencing the loading from this watershed is expansion of the agricultural economy and its effect on "natural" sources (ravine and bluff erosion). Given the more restrictive TMDL requirements applied to the MN River, it is not apparent why the MS River TMDL did not use those requirements as "boundary" conditions for the MS TMDL. The higher load reductions applied to the MN River would most likely have obviated the need for any further actions in the MS River watershed. This lack of integration needs to be addressed.

2. MS River Sub-watershed Reduction Requirements

Regarding the MS River watershed and sediment load sources, it is noted that in the Crow River watershed 40% of the load is attributable to agriculture and "the remainder from non-field sources such as stream banks, bluffs and ravines." (MS TMDL @ 20). The Southernmost reach of the MS River (above the confluence with the MN River) does not exceed the proposed WQS for TSS with seasonal TSS averaging 20-25 mg/l. *Id.* MPCA notes that this is well below the proposed WQS. However, to meet this TMDL a 20% load reduction is allocated to this area. (MS TMDL @ 47) The criteria compliance above the Metro area indicates that whatever loadings are attributable to upstream

sources (MS4 and agriculture) are not causing standard violations. Consequently, the authority to regulate these sources under the Clean Water Act (CWA) is highly questionable.

Likewise, the St. Croix has long term average TSS concentrations far below the WQS, averaging 4.5 mg/l. (MS TMDL @ 22). Consequently, the St. Croix actually improves water quality in the MS River at Lock and Dam #3, downstream of the confluence with the MN River. The MS TMDL does not impose any additional requirements on this watershed. (MS TMDL @ 48) The Cannon River, due to significant agricultural inputs, averages about 70 mg/l TSS at the mouth, in Upper Pool 4. However, as water quality criteria compliance is to be measured at Lock and Dams 2 and 3, it is not apparent how this watershed fits into the compliance determination framework. This watershed is already subject to a turbidity TMDL, completed in 2007. The reduction requirements under that TMDL are more restrictive than the 50% load reduction requirement applicable to the South Metro MS River. MS TMDL @ 47. Finally, there are a series of smaller direct tributaries to Lake Pepin covered by the TMDL. (MS TMDL @ 26). Data were not presented on the average TSS from this watershed surrounding Lake Pepin, though downstream water quality was noted to be 12 mg/l. *Id.*

The long term average TSS concentration in the MN River at Jordan is 141 mg/l and 112 at Snelling. (MS TMDL @ 30) Urban stormwater runoff appears to dilute the TSS concentration from the MN River. Id. It is noted that the MN TMDL calls for up to a 90% reduction in high flow related loads for certain watersheds to achieve compliance with that TMDL. This TMDL requires a 60% reduction in high flow conditions and 50% reduction under average and low flow conditions. Therefore, the more restrictive TMDL is the MN TMDL.

Regulated MS4s throughout the entire basin are provided with a 25% reduction requirement, regardless of location, using a baseline of 2002 loads. (MS TMDL @ 49, 71). However, it is not apparent how this target was chosen or how certain MS4 communities can contribute any measureable loading to the impacted area, if there are lakes downstream of their discharge (*e.g.*, Lakes Winona and Henry in Douglas County). MS4 communities upstream of lakes could expect to have such loads settle out in the downstream lakes. Further regulation of these sources to meet objectives at Lock and Dam #2 would not appear to be defensible.

No further load reductions are required from wastewater treatment facilities. *Id.* However, concerns are raised for communities with lagoon discharges. (MS TMDL @ 63). Since the discharges from many lagoon systems do not occur during the period of concern (summer) it is not apparent why any specific considerations were needed for this class of NPDES holders. Wastewater plants are provided individual allocations at 1.5 times the "calendar month" limitations to allow for additional growth. This methodology does not seem to conform to the long term average nature of the applicable standard. Not to exceed monthly average permit limits are generally much more restrictive than a long term average performance requirement. It does not appear that the differences in

statistical application affecting compliance requirements and necessary WLAs were properly assessed under this TMDL.

Compliance with MS4 NPDES permits using BMPs identified to achieve a 25% reduction in TSS loading will be deemed compliance with the TMDL objectives. (MS TMDL @ 57). If non-approved BMPs are utilized, a specific compliance demonstration must be made. *Id.* All new developments must have "no net increase in discharge of TSS" post construction. *Id.* This statement is not qualified as it applies to extreme storm conditions. While these other sources are being regulated under the MN TMDL, the document notes "success of the TMDL will depend on achieving significant reductions in TSS from a few major subwatersheds in the Minnesota River Basin." (MS TMDL @ 66) The focus of the TMDL is on "non-point pollution because it contributes nearly all the sediment to the South Metro Mississippi." (MS TMDL @ 54) This acknowledgement would seem to justify deferral of any significant actions to reduce minor sources, particularly related to MS4 contributions above the Metro area that do not cause criteria exceedances or in the MN River basin, which are simply negligible.

3. Standards Applicable in Either TMDL

As noted earlier, the most significant regulatory difference between the MN and MS River TMDLs is the applicable standard. The TSS standard for the MS River TMDL is a 32 mg/l TSS as a summer growing season average (June through September) to protect submerged aquatic vegetation. The standard does not have to be met every year but "is to be attained in at least five years over a ten year period of record." (MS TMDL @ 62) Nonetheless, it appears that the compliance strategy under the MS TMDL is being mandated for all flow conditions since load restrictions are specified for five flow regimes (MS TMDL Summary). Moreover, the "long term average" wastewater compliance requirements were converted directly into "daily maximum" loadings even though the permit limitations are 30 day average requirements and many effluent flow rates are based on 30 day wet weather average flows. There is no "daily limit" applicable to any of these facilities and the TMDL would need to clarify that the longer term average, and not the daily maximum requirements, control permitting.

4. Costs

The projected cost for the MS4 component of the MS TMDL is $850 million (MS TMDL @ 70.) The preliminary MS4 cost projected for the MN TMDL was $175 million. This indicates that the contributing municipalities to other MS River drainages account for about $675 million, even though it is not apparent that the MS4 load from this area (other than possibly the Metro area) has any significant impact on TSS levels at Lock and Dam #2. The TMDL recognizes this fact in discussing the need to ratchet down further on either POTWs (that have no reductions) and MS4s (that have a 25% reduction), stating "As this document attests, these are very minor sources of sediment to the South Metro Mississippi River and reducing their wasteload allocations will not help accomplish the goals of the TMDL in any measurable way." (MS TMDL @ 82) The "contingency" discussion regarding the implementation of NPS measures appears to include methods

that are akin to banning or severely restricting agriculture in the MN River basin. (MS TMDL @ 83) It is not apparent that the economic base of the watershed would survive such mandates.

The implementation success for this TMDL is directly tied to the ability to control volumes of flow on an unprecedented scale. Altering the hydrology of the region will be needed to reduce stream, ravine and bluff erosion. It is not apparent why MS4 implementation would take any precedence over such actions which control the success of this TMDL effort. Deferral of any significant cost associated with controlling minor loading sources such as MS4s would appear completely justified based on the TMDL documents.

IV. IMPACT OF PROPOSED TMDL ON REGULATED COMMUNITY

The proposed TMDLs will have a pervasive impact for decades, likely leaving waters perpetually designated as TSS impaired. The TMDL has ramifications beyond its boundaries, because it constitutes a determination that the NTU criteria and their surrogates apply as daily maximum standards. In this form of application, it would be surprising if any waters in the affected basins could meet this test. Under this regulatory interpretation, federal rules impact state permitting and growth in virtually all watersheds. There are several federal rules applicable to this issue – 40 C.F.R. 122.4(i) and 122.44(d). For the past few years EPA has been pushing for a more restrictive position on limitations for impaired waters - permittees should meet water quality standards as "end of pipe" limits pending TMDL development and new dischargers must show compliance end of pipe to not "cause or contribute" to an existing exceedance. MPCA has apparently embraced these concepts in developing this TMDL, at least with respect to industrial and municipal wastewater sources.

Despite indicating that the water quality criteria (at least for the Mississippi River) should apply as a long term average condition focused on the summer growing season, all of the calculations presented appear to require criteria attainment under all flow conditions. For example, large TSS reductions are mandated to occur under high flow scenarios, though such conditions are relatively rare in the June-September period and based on the description of how the WQS is to apply, should have been unnecessary.

The focus on high flow control of urban runoff does not seem either reasonable or attainable. It would be physically impossible for stormwater sources to meet this objective for all discharge conditions. Also, based upon the implementation schedule discussions in each TMDL report stormwater source reductions are apparently "front loaded" for implementation. This would seem to make little sense given that these are high "cost per pound reduced" activities and the overall benefit will be *de minimis*.

Given the vast area subject to the impairment designations (and the numerous smaller tributaries that will also be declared impaired) compliance with these TMDLs and their presumed application of existing standards will have severe economic and social

ramifications on municipal and commercial operations across the state. The following briefly discusses some relevant federal regulations applicable to NPDES (including stormwater) permitting:

A. New or Expanding Sources

For new and expanding dischargers to impaired waters, the federal rules are fairly definitive on allowable pre-and post TMDL activities. Simply put, more often than not, new discharges cannot occur. As set forth in 40 C.F.R. Sec. 122.4(i):

> "No permit may be issued: … (i) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards... of this chapter.

Although the regulation specifically sets forth an exception in situations where a TMDL has already been issued, it contains no similar exceptions for new dischargers to an impaired water without a TMDL in place. This would be all sub-tributaries in the watershed at issue. However, some permitting agencies (and reviewing courts) have interpreted the "cause or contribute" requirement of the regulation to allow new dischargers to impaired water bodies without TMDLs, if those dischargers obtain enough offsets such that there is no net increase in existing loadings. *E.g., Arkansas v. Oklahoma*, 503 U.S. 91 (1992) (Holding that agency could not categorically ban new discharges to impaired waters); *Annandale/Maple Lake*, 731 N.W.2d 502 (Minn. 2007) (Holding that agency could reasonably interpret 122.4(i) to allow a new discharge if sufficient offsets were instituted); *but see*, *Friends of the Wild Swan v. United States EPA*, 74 Fed. App. 718 (9th Cir. 2003) (Holding that district court could properly enjoin state from issuing permits to any new or expanding dischargers under 122.4(i)). The problem in this instance is that it is apparent that elimination of virtually all non-point source contributions will be needed (Scenario # 5). For this reason, there will be no "offset" available to accommodate new growth. Given the suggested daily maximum TSS criteria, these criteria essentially dictate that the state impose a moratorium on growth unless zero discharge from the new source is demonstrated.

Once the TMDL is completed, 122.4(i) allows a new source of pollutants to be permitted *if* it is clear that other sources will be sufficiently reduced and provide capacity for the new source loading (this is not a realistic scenario given the TMDL's scope of necessary nonpoint source and hydrologic changes needed to comply). The 9th Circuit has indicated proof of assimilative capacity must be demonstrated, not presumed, to exist. *Friends of Pinto Creek v. US EPA*, 504 F.3d 1007 (9th Cir, 2007) (Holding that a new source to an impaired water with a TMDL could not be permitted because the exceptions to 122.4(i) were not met). The 9th Circuit disapproved of the permit at issue because there was no guarantee that the offsets would be implemented to create sufficient load allocations. Again, as the TSS targets will be exceeded even by background concentrations in many settings due to ravine and bluff erosion, there is no available assimilative capacity and no new discharge could be added to these waters.

B. Existing Sources

Another regulation which is used to establish pre and post TMDL permitting requirements is 40 C.F.R. § 122.44(d). This regulation sets forth a mechanistic step-wise framework for setting water quality-based effluent limitations ("WQBEL"), whether or not a TMDL has been adopted. WQBELs are established as "necessary to [a]chieve water quality standards established under Section 303 of the CWA." 40 C.F.R. § 122.44(d)(1).

The trigger for initiating a WQBEL analysis is when a permitting authority determines that pollutants "are or may be discharged at a level which will cause, or have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." 40 C.F.R. § 122.44(d)(1)(i). Although the regulations clearly require that an effluent limit must be assigned to dischargers that are deemed to cause or contribute to an exceedance of a state water quality standard, 122.44(d) is silent on what a permitting agency must do in situations where a TMDL is pending. [3]

In the past state permitting agencies have generally interpreted 122.44(d) to allow an existing discharger to maintain its load contribution until a TMDL is created. See also, *In the Matter of the Alexandria Lake Area Sanitary District*, 763 N.W.2d 303 (Minn. 2009); *Comm. for a Better Env't v. State Water Resources Control Board,* 109 Cal. App. 4th 1089 (Cal. Ct. App. 2003). However, EPA has recommended a more restrictive approach to pre-TMDL permitting. When asked whether 122.44(d) required that a state impose end-of-pipe limits on all existing dischargers to impaired streams, EPA's then-Assistant Administrator stated that "there are a number of ways to issue permits for discharges to impaired waters." Letter from Benjamin Grumbles, EPA Headquarters, to Hon. Norm Coleman, U.S. Senate (August 29, 2005). Although this initial response appears to endorse the flexibility used by many of the state and regional permitting agencies, he then elaborated on his statement and listed the following three permitting options: (1) "permits may be issued… for discharges that do not contain the pollutant causing the impairment," (2) "permits may be issued with…end-of-pipe limits," and (3) permits may be issued "where it is demonstrated that other pollutant source reductions will offset the discharge." The letter then concluded by saying that "irrespective of the attainment status of the receiving water body… the State must establish effluent limitations or other permit controls as stringent as necessary to meet the applicable water quality standards."

[3] Specifically, there is no discussion on (1) the timing of developing such WQBELs; (2) whether the 303(d) process may be employed for the development of final WQBELs; (3) the ability of the state to set interim limitations; or (4) the state's ability to impose a permit prohibition absent the availability of the final WQBEL. EPA was also quite clear that 40 C.F.R. § 122.44(d) did not mandate a particular approach for WQBEL development and states may adopt appropriate procedures themselves. 54 Fed. Reg. at 23879 ("Subparagraph (vii) does not prescribe detailed procedures for developing water quality-based effluent limits. Rather, the regulation prescribes minimum requirements for developing water quality-based effluent limits, and at the same time, gives the permitting authority the flexibility to determine the appropriate procedures for developing water quality-based effluent limits.") (emphasis supplied).

MPCA has apparently embraced EPA's suggested approach in specifying that effluent quality needs to be less than the applicable WQS to avoid further regulation under this set of TMDLs. This appears to be occurring regardless of the magnitude of the contribution, as evidenced be the recommendations of $175 million in MS4 measures for a miniscule load contribution (0.4% of the load) in the MN River basin. With regard to the MS River basin, even when the existing MS4 load allows for WQS attainment (as demonstrated by the upper Mississippi River data at Anoka and Pool #1), load reductions are still being required. This is unprecedented and would not be required by CWA Section 303(d) because those loads are not "causing or contributing" to WQS violations. Lastly, MS4 measures are being imposed on communities that could not physically have any material impact on compliance in the MS River – those communities in the contributing basins upstream of lakes. While TMDL analyses may make certain assumptions regarding how loadings translate down a system, those assumptions must relate to reality and this one certainly does not.

As this review demonstrates, pre and post TMDL permitting is clearly going to be an ongoing problem given the policy decisions underlying these TMDLs. How these concepts will apply over the decades of TMDL implementation that will be required must be specified in advance and not left to regulatory chance. The new regulatory paradigm set out in these TMDLs will impact other pollutants as well, such as total nitrogen (TN) reductions for the Gulf of Mexico. If any sources exceeding a water quality standard are regulated as a significant source and through system losses are basically ignored, extremely stringent TN-based controls will be mandated throughout these basins also. It is suggested that further thought on the reasonableness of how this TMDL is structured should be considered.

C. Overarching Regulatory Concerns

As noted above, this group of TMDLs establishes the following key precedents that have far-reaching implications for point and non-point discharges throughout the state:

1. Natural sources (bluffs/ravines) should be considered part of the controllable loadings intended to be regulated under state and federal law;

2. *De minimus* discharges (MS4) should be regulated extensively;

3. Areas in compliance with WQS will be regulated to produce further reductions to achieve downstream WQS violations caused by other sources;

4. Control of runoff volume (water) should be regulated to prevent bank erosion, even under extreme flow conditions. Generally flow is not a pollutant under the CWA and therefore cannot be regulated under the Act;

5. Setting MS4 limitations based on stream flow rather than rainfall events;

6. Long term average criteria will be applied to mandate daily compliance requirements; and,

7. Outdated, chronic NTU criteria will be applied as an acute, short term compliance requirement.

The significance of these "policy" decisions cannot be underestimated. TMDLs mandated to control natural conditions can affect a host of parameters leading to great increased in point source control costs. The proposed (and withdrawn) arsenic TMDL for the upper Mississippi River basin was an example of how mandates to control naturally occurring pollutants can lead to bizarre and extreme regulatory limitations. In that case EPA proposed zero discharge for all wastewater operations in the basin because arsenic levels in soil runoff exceeded drinking water objectives in surface waters.

The decision to impose over $850 million (or even $175 million) in MS4 improvements to regulate a source that is admitted by MPCA to be negligible is a serious change in regulatory direction. Previously MPCA and others did not strictly regulate *de minimus* discharges to impaired waters stringently (See, e.g., Minnesota mercury TMDL, Delaware Bay PCB TMDL). Now, however, this TMDL sets the precedent that when an area wide problem exists due to non-point and natural conditions, stringent NPDES controls are appropriate. There is no provision of the CWA or state law that requires this outcome and the basis for this new policy decision needs to be explored. It is expected that the cost per pound removal of TSS is anticipated to be 10-100 times more expensive than agricultural BMPs. This higher cost, accompanied with the small contributing load indicates there is no reasonable relationship between the costs and environmental benefits of this proposed aspect of the TMDL.

The structure of the TMDL limitations (load curve) poses particular challenges for MS4 discharges. MS4 discharges occur in response to rainfall, not a particular stream flow. The reduced loads applicable under lower flows indicate that greater storage capacity and capture from impervious surfaces must be designed based on the lower flow conditions when instream criteria are achieved. This is not consistent with the basis of the TMDL or the actual compliance data provided in the draft reports.

The continued use of a plainly outdated NTU standard to generate several hundred million in municipal compliance responsibilities is simply not reasonable. The NTU criteria are not "acute standards" though they are applied in that fashion. Failure to develop a proper averaging period applicable to this standard produces a very bizarre result. For example Figure 6.11 – Blue Earth- Rapidan (MN TMDL @ 175) shows the effect of failing to use the correct averaging period. On a daily basis, the peak TSS level may be 20 times the long term average. To ensure compliance with a 90 mg/l TSS criterion on a daily maximum basis, the long term average TSS needs to be on the order of 5 mg/l. The MS TMDL, however, informs us that the acceptable long term average TSS reading is 32 mg/l (6 times less restrictive). So, although the MN River appears to be using a less restrictive WQS than the MN River – in fact, it is not. Daily maximum compliance is a far more important component of a WQS when the system response to

the parameter is highly variable. Spending several addition billion dollars simply because the averaging period of the standard is out of date is not a reasonable regulatory proposal. This WQS needs to be updated because, as presently stated is impossible to achieve and unnecessary to ensure appropriate environmental protection.

Finally the load duration curves specify that major load reductions are mandated under high flow conditions. Putting aside that it is not apparent why infrequent high flow conditions are even a concern under a long term average criteria, this is an impossible task that would involve unprecedented efforts far outside the scope of the CWA. Bank erosion and ravine contributions are greatest under high flows – as demonstrated by the data presented in the report. Regulation of flow to prevent bank erosion will create the need to capture flood waters – an impossible scenario. The TMDL premises its compliance on the need to control these conditions, which necessarily means controlling flood waters. This will not and cannot occur and, under the CWA is not required to occur.

D. Likely Impacts on Minnesota Economy

Based on the TMDL approach to defining NTU and TSS compliance, virtually all streams in agricultural and urban areas will be identified as TSS/NTU impaired and the statewide need for corrective action will be pervasive. The following impacts on the regulatory community are likely to occur with adoption of the proposed water quality criteria interpretation and TMDL objectives.

Municipal and Industrial Wastewater: The impacts on municipal entities (and other industrial NPDES permittees) are the most straightforward. At permit reissuance, TSS limitations will not be allowed to exceed the applicable instream objective. The cost impact of this requirement, fortunately, is expected to be minimal. The application of limitations to new facilities will depend on clarifying the requirements of federal law.

Municipal Stormwater: Storm water discharges are all subject to NPDES compliance requirements, as are continuous dischargers. While the TMDLs applies to the MN and MS Rivers, the WQS apply to all 2B streams. Therefore, widespread non-compliance will ensue from the determination that NTU requirements apply on a daily maximum basis. The stormwater BMPs will need to be configured to extreme reductions in surface runoff and control of flood waters to ensure compliance on a daily maximum basis. This will greatly exceed the 25% reduction proposed in the TMDL for compliance to occur in the large downstream rivers. Achieving anticipated TMDL reduction requirements will likely be impossible. Large detention basins that promote TSS capture may be a possibility, assuming sufficient land is available. Of course, they will overflow in flood conditions.

Agriculture: The TMDL documents that agricultural sources are substantial. Control of flow volume from these sources will be needed to comply which

means large detention basins. The degree of TSS reduction mandated by the TMDL would seem to be simply inconsistent with the ability to conduct agricultural operations in an economically viable manner in the state. It is not possible to prevent runoff under high flow conditions when localized flooding may persist. Nor are certain agricultural operations viable if under draining is proscribed. TMDL discussions regarding elimination of under drains and other measures that make farming practices viable does not seem realistic.

Presently, there are limited regulatory vehicles to control agricultural runoff. It is expected that federal subsidies for crops will be tied to implementation of BMPs. However, EPA has placed severe restrictions on agricultural water usage where endangered species concerns existed (see Klamath River, OR/CA). Moreover, federal funding for agricultural operations can be jeopardized if such operations are determined to cause widespread violations of federal law or nuisance conditions. The economic implications of this TMDL for the statewide economy may therefore be dramatic.

V. CONCLUSIONS AND RECOMMENDATIONS

While it is clear that substantial efforts have been undertaken in the development of these TMDLs, it is apparent a number of major scientific and regulatory decisions should receive further consideration. It makes little sense to impose costly restrictions on negligent pollutant sources. Moreover, adoption of TMDLs that require physically or economically impossible measures or use of outdated criteria to establish a highly restrictive program that will affect municipal and commercial expenditures for decades to come is not advisable. The following actions, at a minimum, need to be undertaken to prevent these realities from occurring:

1. The adoption of TMDLs should be postponed until the WQS averaging period issues are resolved and the proper statistical translation of the TSS/NTU criteria into load restrictions is achieved.

2. The NTU criteria should be updated in advance of TMDL adoption for the MN River, considering the impact of applying an outdated standard in that watershed.

3. Regulating negligible sources should be deferred pending confirmation that the large sources can be effectively reduced. If the large, quasi-natural sources cannot be regulated, consideration should be made on declaring certain sources "irretrievable" under applicable federal rules and restructuring the applicable standards and TMDL requirements.

4. MPCA needs to reconsider the use of the load-duration curves to ensure that they fit properly with the underlying statistical construct of the applicable criteria. The use of such TMDL methods to direct MS4 wasteload allocations requires further

thought because stream flow, particularly for large river systems, is not related to local rainfall patterns and intensity.

5. TMDLs that require stormwater controls under high flow or extreme flow conditions need to be reconsidered. It is not possible to regulate such natural events and the TMDL should not be structured to imply such regulation is required.

6. The authority to control flow (versus pollutant load) should be clarified. This may be a state-law decision. If so, portions of the TMDL intended to implement measures outside the scope of the Clean Water Act should be specified as these would not be federally enforceable requirements.

7. The legal authority to control sources that are not causing the exceedance of WQS should also be clarified (e.g., sources upstream of Anoka).

8. The possible impact of upstream sources needs to be reasonably projected to downstream locations. Regulation of any source upstream of a lake should be deferred pending a modeling framework that accurately accounts for the effect of a lake on sediment transport.

9. Where long term non-compliance with a proposed TMDL is projected, a post-TMDL permitting policy needs to be developed so that planned growth may be integrated with long-term pollution reduction goals. This policy would allow for increased flows and new permits to be issued so long as an overall decrease in the pollutant of concern occurs upstream of the impaired water or where the source is negligible.

10. MPCA needs to clarify how pollution trading programs may be used to allow for implementation of more cost-effective measures (both short and long term) and how such procedures may be used to allow long-term growth to occur pending completion of TMDL activities. This is particularly appropriate when a MS4 community could fund efforts to address non-CWA mandated activities (stream bank erosion control, hydrologic controls) that are far more cost effective than capturing waters from impervious surfaces.

ARDEN HILLS

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Arden Hills submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Arden Hills is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the

TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a

25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*

- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

- *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
- *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
- *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
- *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
    - In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger

loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements

in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the

higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

    The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

    Reasons or Proposed Findings #15

    The USEPA guidance document includes the following text:

"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:

- *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Arden Hills asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

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May 24, 2012

Mr. Robert Finley
Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Drive
Suite 2165
Mankato, MN 56001

RE: Comments on Mississippi River Total Suspended Solids (TSS) TMDL

Dear Mr. Finley:

The City of Big Lake has reviewed the draft Report for the South Metro Mississippi Total Suspended Solids Total Maximum Daily Load. The City hereby officially requests consideration of the following concerns associated with the proposed TMDL allocation.

1) The report states "*that the required TSS reduction load for regulated MS4s results in an aggregate cost estimate of $850 million for the MS4s affected by this TMDL.*" Given the magnitude of these costs, it is imperative that MPCA postpone any required implementation plans until:
   a) Additional analyses regarding cost effectiveness are completed
   b) The local implications of establishing new policies are known.

   We are concerned that our upcoming MS4 permit will be scrutinized relative to this TMDL and that we will be penalized for failing to blindly implement presumed turbidity reduction measures at a significant cost to our constituents without knowing whether those strategies will be effective relative to the cost.

2) The math of the study does not make sense. The MS4's currently contribute 5.8% of the TSS load to the river. Reducing this by 25% is a 1.5% reduction in the load to the river. The margin of safety used in the calculation was 6%! It seems that $850 million for a 1.5% reduction in the loading does not make a lot of financial sense.

3) The proposed waste load allocation appears to be unfairly weighted toward current permitees (i.e., MS4s, municipalities with wastewater treatment plants, etc.) with the only justification being that only these entities are subject to enforcement. The City believes that the waste load allocation should be fairly distributed to all load contributors regardless of whether the allocation is enforceable.

4) The constitutional amendment funding is a great source for assistance in the financing, but the funding is limited relative to the magnitude of the funding available for Municipal TMDLs. According to the MPCA website, the 2011 Legislative session allocated $47.77million to the

Minnesota Pollution Control Agency. The website goes on to note that over the 2012-2013 biennium, this funding will be allocated as follows:

- $16.5 million for water quality monitoring and assessment,
- $21.9 million for water quality study (TMDLs) and tool development,
- $5.1 million for Water quality protection and restoration efforts, including St. Louis River restoration
- $4.27 million for Groundwater assessment and SSTS

From this it appears that more than half of MPCAs constitutional amendment monies are being spent monitoring and developing TMDLs and approximately 10% is allocated toward protection and restoration. If constitutional amendment funding is considered a potential financing mechanism to help permitees offset the high cost of the designated waste load allocation, and if the estimated total cost of the South Metro TMDL is $850 million, it will take over 330 years at the current $5.1 million restoration allocation per biennium to fully finance only the South Metro Mississippi Turbidity TMDL. Unless the allocation is redistributed to focus on restoration efforts rather than studies and tool development, Minnesota will have spent a significant amount of its Clean Water Fund to set TMDLs with comparatively insignificant funding allocated toward restoration.

Although there are more issues that should be addressed, we feel that the most important comment we can make is to request fair and equitable treatment of all contributors to the problem regardless of the enforceability. If the MPCA insists on unequal allocations, then the Clean Water Fund should grant opportunities should be similarly and unequally allocated.

We sincerely hope that all branches of the MPCA, including the MS4 permit reviewers, consider the inequality of the proposed TMDL when the next MS4 permit is reviewed.

Thank you for the opportunity to share our feelings on this matter.

Sincerely,

BOLTON & MENK, INC.

Bradley C. DeWolf, P.E.
City Engineer

FLAHERTY | HOOD P.A.

May 29, 2012

Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

BY E-MAIL AND U.S. MAIL
robert.finley@state.mn.us

Re: Draft South Metro Mississippi River Turbidity Total Maximum Daily Load (TMDL) Report
Comments of Municipal Groups and Cities located on Minnesota River

Dear Mr. Finley:

Thank you for the opportunity to offer the following comments on the draft the draft South Metro Mississippi River turbidity TMDL report. I am submitting the collective comments of the following coalition of city organizations as well as individual cities located along the Minnesota River who will be impacted by this TMDL. The comments contained in the attached document, Evaluation of the Regulatory and Scientific Concerns Regarding the Adoption of Turbidity and TSS TMDLs For The Minnesota And Mississippi Rivers, were prepared by John Hall, Hall & Associates, on behalf of the following cities and city organizations:

- League of Minnesota Cities, an organization of 803 out of the 853 cities in Minnesota including most cities located along the Minnesota River and the South Metro portion of the Mississippi River;
- Coalition of Greater Minnesota Cities, an organization of approximately 77 cities located throughout the state of Minnesota including numerous cities located along the Minnesota and Mississippi River;
- Minnesota Cities Stormwater Coalition, a member-based city organization that provides help to cities in implementing various federal and state stormwater requirements and which represents many of the cities located along the Minnesota River;
- City of Fairmont
- City of Mankato;
- City of Marshall;
- City of New Ulm
- City of North Mankato;
- City of Redwood Falls;
- City of St. Cloud; and
- City of Waseca.

Similar comments are being submitted on the Minnesota River TMDL, and many of our identified concerns cut across both TMDLs.

Written responses to the foregoing may be directed to my attention at 525 Park Street, Saint Paul, MN 55105. I can also be reached by phone at 651-259-1924 or by e-mail at eawefel@flaherty-hood.com. Thank you for your time and attention.

Yours Truly,

Elizabeth Wefel
Coalition of Greater MN Cities, Staff Lobbyist/Attorney

cc (via email):

Craig Johnson, League of Minnesota Cities
Randy Neprash, Minnesota Cities Stormwater Coalition
Butch Hybbert, City of Fairmont
Troy Nemmers, City of Fairmont
Mary Fralish, City of Mankato
Patrick Hentges, City of Mankato
Mark Knoff, City of Mankato
Ben Martig, City of Marshall
Scott Truedson, City of Marshall
Bob Van Moer, City of Marshall
Tom Stough, City of New Ulm
Wendell Sande, City of North Mankato
Keith Muetzel, City of Redwood Falls
Patrick Shea, City of St. Cloud
Tracy Hodel, City of St. Cloud
Crystal Prentice, City of Waseca
Carl Sonnenberg, City of Waseca
Timothy Flaherty, Flaherty & Hood
Steven Nyhus, Flaherty & Hood
John C. Hall, Hall & Associates

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the

TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a

25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*

- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

- *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
- *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
- *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
- *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
    - In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger

loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements

in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the

higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

    The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

    Reasons or Proposed Findings #15

    The USEPA guidance document includes the following text:

"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:

- *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Arden Hills asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

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May 24, 2012

Mr. Robert Finley
Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Drive
Suite 2165
Mankato, MN 56001

RE: Comments on Mississippi River Total Suspended Solids (TSS) TMDL

Dear Mr. Finley:

The City of Big Lake has reviewed the draft Report for the South Metro Mississippi Total Suspended Solids Total Maximum Daily Load. The City hereby officially requests consideration of the following concerns associated with the proposed TMDL allocation.

1) The report states "*that the required TSS reduction load for regulated MS4s results in an aggregate cost estimate of $850 million for the MS4s affected by this TMDL.*" Given the magnitude of these costs, it is imperative that MPCA postpone any required implementation plans until:
   a) Additional analyses regarding cost effectiveness are completed
   b) The local implications of establishing new policies are known.

   We are concerned that our upcoming MS4 permit will be scrutinized relative to this TMDL and that we will be penalized for failing to blindly implement presumed turbidity reduction measures at a significant cost to our constituents without knowing whether those strategies will be effective relative to the cost.

2) The math of the study does not make sense. The MS4's currently contribute 5.8% of the TSS load to the river. Reducing this by 25% is a 1.5% reduction in the load to the river. The margin of safety used in the calculation was 6%! It seems that $850 million for a 1.5% reduction in the loading does not make a lot of financial sense.

3) The proposed waste load allocation appears to be unfairly weighted toward current permitees (i.e., MS4s, municipalities with wastewater treatment plants, etc.) with the only justification being that only these entities are subject to enforcement. The City believes that the waste load allocation should be fairly distributed to all load contributors regardless of whether the allocation is enforceable.

4) The constitutional amendment funding is a great source for assistance in the financing, but the funding is limited relative to the magnitude of the funding available for Municipal TMDLs. According to the MPCA website, the 2011 Legislative session allocated $47.77million to the

Minnesota Pollution Control Agency. The website goes on to note that over the 2012-2013 biennium, this funding will be allocated as follows:

- $16.5 million for water quality monitoring and assessment,
- $21.9 million for water quality study (TMDLs) and tool development,
- $5.1 million for Water quality protection and restoration efforts, including St. Louis River restoration
- $4.27 million for Groundwater assessment and SSTS

From this it appears that more than half of MPCAs constitutional amendment monies are being spent monitoring and developing TMDLs and approximately 10% is allocated toward protection and restoration. If constitutional amendment funding is considered a potential financing mechanism to help permitees offset the high cost of the designated waste load allocation, and if the estimated total cost of the South Metro TMDL is $850 million, it will take over 330 years at the current $5.1 million restoration allocation per biennium to fully finance only the South Metro Mississippi Turbidity TMDL. Unless the allocation is redistributed to focus on restoration efforts rather than studies and tool development, Minnesota will have spent a significant amount of its Clean Water Fund to set TMDLs with comparatively insignificant funding allocated toward restoration.

Although there are more issues that should be addressed, we feel that the most important comment we can make is to request fair and equitable treatment of all contributors to the problem regardless of the enforceability. If the MPCA insists on unequal allocations, then the Clean Water Fund should grant opportunities should be similarly and unequally allocated.

We sincerely hope that all branches of the MPCA, including the MS4 permit reviewers, consider the inequality of the proposed TMDL when the next MS4 permit is reviewed.

Thank you for the opportunity to share our feelings on this matter.

Sincerely,

BOLTON & MENK, INC.

Bradley C. DeWolf, P.E.
City Engineer

City of Blaine

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Blaine, MN 55449-8101
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May 29, 2012

Robert Finley
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN

RE: South Metro Mississippi River TMDL Comments

Dear Mr. Finley:

These comments on the South Metro Mississippi River TMDL are from the City of Blaine, a MS4 city within the drainage area of the TMDL. As you will notice the form of these comments are similar to others you will receive. We do want to emphasize Statements 2, 4, 7, 9, 10 and 13 as the most critical to our interests; however, all of the comments are significant and we hope they are seriously considered.

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Blaine submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Blaine is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

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The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

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"the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

Statement of Action #4

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire Wastewater Treatment Plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

"To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

- *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
- *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
- *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
- *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending

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on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

Statement of Action #6

Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

Reasons or Proposed Findings #6

It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

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Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions:** There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within

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their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.

- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

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The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
Developed, high density (more than 79 percent impervious) – 65,750 acres; and
Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

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MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges:** It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River:** In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

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In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

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Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

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Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the*

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watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please

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specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous

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considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality.*" (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

    Reasons or Proposed Findings #19

    Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

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Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Blaine asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Thank you for the opportunity to comment. We look forward to the response from the MPCA.

Sincerely,

Jim Hafner
Stormwater Manager
(763) 785-6188
jhafner@ci.blaine.mn.us

CITY OF
BLOOMINGTON
MINNESOTA

May 29, 2012

Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

RE: PUBLIC COMMENT – Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load (TMDL) Report and Request for Comment

Dear Mr. Finley:

Please consider the following comments pertaining to the Public Notice for the Draft South Metro Mississippi River Total Suspended Solids TMDL Report.

Statement of Interest

The City of Bloomington has an interest in this TMDL as a permitted MS4 identified as being within the South Metro Mississippi River watershed.

Comments/Statements of Actions/Reasons of Support

1. **Statement of Action**
   - Revise the MS4 WLA and eliminate the 25% reduction in TSS loading from a baseline of 2002 for MS4s. The current WLA should be revised and 25% reduction should be eliminated or at a minimum expressed in a non-numeric form more closely following the Maximum Extent Practicable approach found in the MS4 Permit. Additionally, the 2002 baseline should either be eliminated or changed to a date more consistent with actual changes in pollutant loading from MS4s or perhaps even aligning with the current Nondegradation Rule.

   Reasons of Support
   - MS4s are already implementing Storm Water Pollution Prevention Programs to restore and maintain water quality standards to the Maximum Extent Practicable (See Permit No: MNR040000). MS4s with coverage under this permit are already meeting the goals of this TMDL.

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- According to the TMDL (Page 33) the total MS4 area represents 6.4% of the South Metro Mississippi Watershed. The current estimated load accounts for 5.8% of the average annual TSS load (Page 57). A 25% reduction results in a 1.5% decrease in loading at an estimated cost of $850 million to the affected MS4s. The amount of benefit or reduction in TSS loading associated with this cost simply is not prudent.
- The TMDL Report states that the Minnesota River accounts for 75% of the TSS load and further identifies that the upstream sediment source is dominant. Simply put, not regulating the LA and expending significant resources to achieve a 1.5% decrease in pollutant loading will not result in achieving water quality standards for the South Metro Mississippi River.
- The 1.5% projected reduction in TSS loading along with the 5.8% existing annual TSS load are both less than the margin of safety (MOS). If the MOS is accounting for uncertainty, it is very likely that the $850 million expenditure to reduce TSS load in MS4s by 25% will likely have no noticeable, positive impact on the South Metro Mississippi River.

2. **Statement of Action**
   - The South Metro Mississippi River TMDL should be postponed or redone until completion of the nondegradation/antidegradation rule revision.

   Reasons of Support
   - The nondegradation/antidegradation rule revision will have an impact on all receiving waters and additionally will result in new requirements to MS4s. Specific projects such as the South Metro Mississippi TMDL should take advantage of efforts such as rules and statutes before developing requirements that could result in duplication or a less than efficient expenditure of resources.
   - The nondegradation/antidegradation rule addresses discharges, pollutants, and a baseline date to protect beneficial uses of waters.

3. **Statement of Action**
   - The South Metro Mississippi River TMDL should be postponed or redone until completion of "nested" TMDLs.

   Reasons of Support
   - According to the South Metro Mississippi River TMDL draft report the Minnesota River accounts for 75% of the TSS load to the South Metro Mississippi River. The Minnesota River Turbidity TMDL draft report has been completed and is out for

public comment. It does not seem possible to achieve the South Metro Mississippi River TMDL without first completing the Minnesota River Turbidity TMDL.

- At a minimum, the South Metro Mississippi River TMDL report and the Minnesota River Turbidity TMDL reports should have consistent allocations and loading targets or these results should be considered boundary conditions of the South Metro Mississippi River TMDL.
- The same consideration should be given to other TMDLs such as the Cannon River Basin and Vermillion River Basin.

4. **Statement of Action**
   - The South Metro Mississippi River TMDL through its linkage with the NPDES MS4 permit places tremendous costs and legal liability onto permitted MS4s. The cost to implement BMPs and the potential costs associated with addressing future claims should the South Metro Mississippi River not meet water quality standards is tremendous. As stated in the above comments there are numerous factors that contribute to the South Metro Mississippi River TMDL that are outside reach of MS4s and apparently even the MPCA, finalizing this TMDL in this format will ensure that water quality standards are not met while placing all liability on only a few parties. The South Metro Mississippi River TMDL should be postponed or redone until these issues are addressed.

Reasons of Support

- MS4s contribute only 5.8% of the average annual TSS load to the South Metro Mississippi River. Linking success of this TMDL to the MS4 permit will expose MS4s to liability that is outside of their control. MS4s have no control, ability or responsibility to address 94% of the remaining TSS load. Further, at least 75% load comes from non-permitted sources – according to the Draft TMDL any reductions to this 75% will be purely voluntary with no guarantee of implementation.
- There are a number of areas within the Draft TMDL that need to be reviewed relating to the TMDL and WLA from MS4s.
  - Improper or arbitrary baseline set at 2002.
  - Recognition of high costs of implementation with little to no measurable benefit.
  - No mechanism to adjust MS4 implementation commensurate with load reductions from non-permitted sources.
  - Requiring load reductions for loads that are below the MOS.

- There is no mechanism in place to address the "what if" in the event the South Metro Mississippi River does not meet water quality standards even after implementation of $850 million worth of urban MS4 BMP implementation.

In general, this draft TMDL takes an approach similar to what is existing and in-place today to address water quality issues for the South Metro Mississippi River – relying on voluntary actions to address close to 80% of the pollutant loading while imposing significant additional regulations and costs on the much smaller load source. This approach will be far from a guarantee of improved water quality while encumbering MS4s with enormous cost and liability exposure. Without a more direct approach to the source of the majority of the pollutant load, significant expenditures to meet this TMDL will be misguided and likely wasted. It is requested that the MPCA consider these comments and actions and make the necessary revisions to the Draft TDML Report.

Thank you for the opportunity to provide comments. If you have questions or need additional information or clarification, please contact me at 952-563-4867 or smanderson@ci.bloomington.mn.us

Sincerely,

Scott M. Anderson, P.E.
Engineering Division
City of Bloomington

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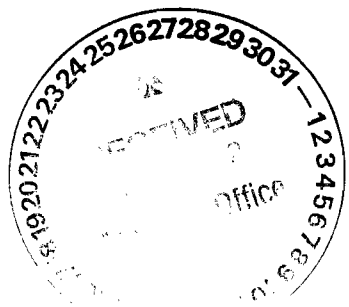

May 24, 2012

Robert Finley
Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Drive
Suite 2165
Mankato, MN 56001

RE: Comments on Mississippi River Total Suspended Solids (TSS) TMDL

Dear Mr. Finley:

This letter is written on behalf of our many MS4 client communities as listed below:

1. Waconia
2. Louisville Township
3. Deephaven
4. Greenwood
5. Mound
6. Orono
7. St. Bonifacius
8. Woodland
9. Big Lake
10. Buffalo
11. Litchfield

All of these cities are MS4 communities that are directly affected by the proposed Mississippi River Total Suspended Solids (TSS) TMDL. As such, each city has a vested interest in this TMDL report and any associated waste load allocations. We have reviewed the draft Report for the South Metro Mississippi Total Suspended Solids Total Maximum Daily Load. On behalf of these Cities, we hereby officially request consideration of the following concerns associated with the proposed TMDL allocation.

1. Section 7.1, Economic Analysis (page 70) of the report states, "*the required TSS reduction load for regulated MS4s results in an aggregate cost estimate of $850 million for the MS4s affected by this TMDL.*"

   Given the magnitude of these costs, it is imperative that MPCA postpone any required implementation plans until:

   a. Additional analyses regarding cost effectiveness are completed
   b. The local implications of establishing new policies are known.

   We are concerned that our upcoming MS4 permit will be scrutinized relative to this TMDL and that we will be penalized for failing to blindly implement presumed turbidity reduction measures at a significant cost to our constituents without knowing whether those strategies will be effective relative to the cost.

Requested Action: Include language stating that implementation plans may be postponed until the cost effectiveness of the many alternative Best Management Practices (BMPs) designed to reduce TSS is better quantified and application parameters associated with the more cost effective BMPs are fully established.

Specific Reason for Requested Action: Unless outside funding is readily available, these MS4 Cities are economically challenged with the slow recovery from the recession. Dealing with a new unfunded mandate to address this issue is extremely difficult without having proof that the actions taken will be cost effective.

2. The math of the study does not make sense. The MS4's currently contribute 5.8% of the TSS load to the river (page 57). Reducing this by 25% is a 1.5% reduction in the load to the river. The explicit margin of safety used in the calculation was 6% (page 61)! It seems that $850 million for a 1.5% reduction in the loading does not make a lot of financial sense.

   Requested Action: Reallocate the waste load allocations to address the issue rather than focusing on MS4s because of the relative ease of enforcement.

   Specific Reason for Requested Action: We are concerned that the MS4 communities will expend significant funds in an effort to meet the load reduction requirement only to find that the problem still exists due to a lack of enforcement or funds addressing the load contribution from non MS4 sources.

3. The proposed waste load allocation appears to be unfairly weighted toward current permitees (i.e., MS4s, municipalities with wastewater treatment plants, etc.) with the only justification being that only these entities are subject to enforcement. The City believes that the waste load allocation should be fairly distributed to all load contributors regardless of whether the allocation is enforceable.

   Requested Action: Write the final TMDL report in a manner that fairly and evenly distributes the waste load allocations among all contributors.

   Specific Reason for Requested Action: We are concerned that our all of the MS4 communities will expend significant funds in an effort to meet the load reduction requirement only to find that the problem still exists due to a lack of enforcement or funds addressing the load contribution from non MS4 sources.

4. The constitutional amendment funding is a great source for assistance in the financing, but the funding is limited relative to the magnitude of the funding available for Municipal TMDLs. According to page 4 of the MPCA Clean Water Fund Expenditure Report website (http://www.pca.state.mn.us/index.php/view-document.html?gid=17142), the 2011 Legislative session allocated $47.77 million to the Minnesota Pollution Control Agency. The website goes on to note that over the 2012-2013 biennium, this funding will be allocated as follows:

   - $16.5 million for water quality monitoring and assessment,
   - $21.9 million for water quality study (TMDLs) and tool development,
   - $5.1 million for Water quality protection and restoration efforts, including St. Louis River restoration
   - $4.27 million for Groundwater assessment and SSTS

   From this it appears that more than half of MPCAs constitutional amendment monies are being spent monitoring and developing TMDLs and approximately 10% is allocated toward protection and

restoration. If constitutional amendment funding is considered a potential financing mechanism to help permitees offset the high cost of the designated waste load allocation, and if the estimated total cost of the South Metro TMDL is $850 million, it will take over 330 years at the current $5.1 million restoration allocation per biennium to fully finance only the South Metro Mississippi Turbidity TMDL. Unless the allocation is redistributed to focus on restoration efforts rather than studies and tool development, Minnesota will have spent a significant amount of its Clean Water Fund to set TMDLs with comparatively insignificant funding allocated toward restoration.

Requested Action: The report should address more than just the cost. It should further analyze the economic impact on the watershed and its MS4 communities. It should also discuss the likelihood of successful financial implementation. Under the current scenario, and without adequate grant financing, enforcement penalties for failing to adequately implement strategies to meet the waste load allocations are likely to be far less than the cost of implementation.

Specific Reason for Requested Action: We are concerned that our all of the MS4 communities will expend significant funds in implementation efforts without proper grant opportunities that are insignificant relative to the magnitude of the costs cited in the draft report.

Although there are more issues that should be addressed, we feel that the most important comment we can make is to request fair and equitable treatment of all contributors to the problem regardless of the enforceability and to address the ramifications of the exorbitant costs involved. If the MPCA insists on unequal allocations, then the Clean Water Fund should be used to provide more significant grant opportunities and should be similarly and unequally allocated.

We sincerely hope that all branches of the MPCA, including the MS4 permit reviewers, consider the inequality of the proposed TMDL when reviewing the individual municipal applications and auditing the associated SWPPPs.

Thank you for the opportunity to share our feelings on this matter.

Sincerely,

BOLTON & MENK, INC.

William R. Douglass, P.E.
Principal
Water Resources Group Manager
WRD/wrd

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Buffalo submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Buffalo is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.

- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its

resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on*

water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These

boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate.

This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of

impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory

requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

<u>Reasons or Proposed Findings #12</u>

Please see above.

13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #13

    The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

    - The immense estimated cost to achieve the WLA
    - The load reductions for the MN River TMDL
    - The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

    These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

    Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

    "Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether

existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
    - Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
    - Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
    - Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the

underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Buffalo asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

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May 24, 2012

Mr. Robert Finley
Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Drive
Suite 2165
Mankato, MN 56001

RE: Comments on Mississippi River Total Suspended Solids (TSS) TMDL

Dear Mr. Finley:

The City of Buffalo has reviewed the draft Report for the South Metro Mississippi Total Suspended Solids Total Maximum Daily Load. The City hereby officially requests consideration of the following concerns associated with the proposed TMDL allocation.

1) The report states "*that the required TSS reduction load for regulated MS4s results in an aggregate cost estimate of $850 million for the MS4s affected by this TMDL.*" Given the magnitude of these costs, it is imperative that MPCA postpone any required implementation plans until:
   a) Additional analyses regarding cost effectiveness are completed
   b) The local implications of establishing new policies are known.

   We are concerned that our upcoming MS4 permit will be scrutinized relative to this TMDL and that we will be penalized for failing to blindly implement presumed turbidity reduction measures at a significant cost to our constituents without knowing whether those strategies will be effective relative to the cost.

2) The math of the study does not make sense. The MS4's currently contribute 5.8% of the TSS load to the river. Reducing this by 25% is a 1.5% reduction in the load to the river. The margin of safety used in the calculation was 6%! It seems that $850 million for a 1.5% reduction in the loading does not make a lot of financial sense.

3) The proposed waste load allocation appears to be unfairly weighted toward current permitees (i.e., MS4s, municipalities with wastewater treatment plants, etc.) with the only justification being that only these entities are subject to enforcement. The City believes that the waste load allocation should be fairly distributed to all load contributors regardless of whether the allocation is enforceable.

4) The constitutional amendment funding is a great source for assistance in the financing, but the funding is limited relative to the magnitude of the funding available for Municipal TMDLs. According to the MPCA website, the 2011 Legislative session allocated $47.77million to the

Minnesota Pollution Control Agency. The website goes on to note that over the 2012-2013 biennium, this funding will be allocated as follows:

- $16.5 million for water quality monitoring and assessment,
- $21.9 million for water quality study (TMDLs) and tool development,
- $5.1 million for Water quality protection and restoration efforts, including St. Louis River restoration
- $4.27 million for Groundwater assessment and SSTS

From this it appears that more than half of MPCAs constitutional amendment monies are being spent monitoring and developing TMDLs and approximately 10% is allocated toward protection and restoration. If constitutional amendment funding is considered a potential financing mechanism to help permitees offset the high cost of the designated waste load allocation, and if the estimated total cost of the South Metro TMDL is $850 million, it will take over 330 years at the current $5.1 million restoration allocation per biennium to fully finance only the South Metro Mississippi Turbidity TMDL. Unless the allocation is redistributed to focus on restoration efforts rather than studies and tool development, Minnesota will have spent a significant amount of its Clean Water Fund to set TMDLs with comparatively insignificant funding allocated toward restoration.

Although there are more issues that should be addressed, we feel that the most important comment we can make is to request fair and equitable treatment of all contributors to the problem regardless of the enforceability. If the MPCA insists on unequal allocations, then the Clean Water Fund should grant opportunities should be similarly and unequally allocated.

We sincerely hope that all branches of the MPCA, including the MS4 permit reviewers, consider the inequality of the proposed TMDL when the next MS4 permit is reviewed.

Thank you for the opportunity to share our feelings on this matter.

Sincerely,

BOLTON & MENK, INC.

Bradley C. DeWolf, P.E.
City Engineer

Centerville
Established 1857
7890 Main Street, Centerville, MN 55038
651-429-3232 or Fax 651-429-8629

May 29, 2012

Mr. Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN, 56001

The City of Centerville submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Centerville is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot

say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in

metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in

deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops,

thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river,

a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
Developed, high density (more than 79 percent impervious) – 65,750 acres; and
Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition

(page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears

that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment from the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*

- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the

permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

    Reasons or Proposed Findings #17

    The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?

- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

The Margin of Safety (MOS) is defined as *"an accounting of uncertainty about the relationship between pollutant loads and receiving water quality."* (page 2) The

TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the

USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Cannon Falls asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Yours truly,

Dallas Larson
City Administrator

Cc: Randy Neprash, MCSC

May 29, 2012

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Champlin submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Champlin is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a

25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target:** The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL"*.
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in

deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are,

therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

   The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
   - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading

accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;

Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges:** It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

12. **Past results for the Minnesota River:** In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:
    - Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
    - State and local funding will be directed toward improving water quality in the Minnesota River
    - The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate **less** stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until

after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?

- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

The Margin of Safety (MOS) is defined as *"an accounting of uncertainty about the relationship between pollutant loads and receiving water quality."* (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Champlin asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Name: CITY OF CHAMPLIN

By: _____
Mark Uglem, Mayor

Date: 5/29/12

And: _____
Bret Heitkamp, City Administrator

Date: 5-29-12

City of Eagan

Mike Maguire
Mayor

Paul Bakken
Cyndee Fields
Gary Hansen
Meg Tilley
Council Members

Thomas Hedges
City Administrator

May 29, 2012

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Eagan submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Eagan is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:
   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
   - The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
   - Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
   - Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
   - Improperly setting the MS4 WLAs according to flow conditions in the river
   - Improperly setting the MS4 baseline year at 2002

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- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   <u>Statement of Action #2</u>

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLs.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:
   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:
   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL"*.
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the*

fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   • Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
   • Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
   • Developed, high density (more than 79 percent impervious) – 65,750 acres; and
   • Developed, open space (less than 20 percent impervious) – 154,600 acres."

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

   Reasons or Proposed Findings #5

   The boundaries for the permitted cities are flawed in at least three significant ways:

   - The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the

underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.

- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

   The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
   - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
   - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in

loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.

- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
Developed, high density (more than 79 percent impervious) – 65,750 acres; and
Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and
(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of

sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

    The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

    Reasons or Proposed Findings #15

    The USEPA guidance document includes the following text:

    "EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:

- *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

    Reasons or Proposed Findings #19

    Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Eagan asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Eric Macbeth
Water Resources Manager

Cc: Russ Matthys, Acting Director of Public Works, City Engineer

City of Elk River
13065 Orono Parkway
Elk River, MN 55330

May 29, 2012

Robert Finley
MPCA
520 Lafayette Road North
Saint Paul MN

RE: Draft South Metro Mississippi River Total Suspended Solids TMDL Report

Dear Mr. Finley:

The City of Elk River submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Elk River is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

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Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and

discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

Statement of Action #4

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

   Reasons or Proposed Findings #5

   The boundaries for the permitted cities are flawed in at least three significant ways:

   - The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
   - Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final

allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
Developed, high density (more than 79 percent impervious) – 65,750 acres; and
Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve <u>all</u> the allocations, including the LA.

<u>Reasons or Proposed Findings #10</u>

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve <u>all</u> the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

<u>Statement of Action #11</u>

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

<u>Reasons or Proposed Findings #11</u>

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:

- Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
- State and local funding was directed toward improving water quality in the Minnesota River
- The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:

- *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming

less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not

effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

    Reasons or Proposed Findings #19

    Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

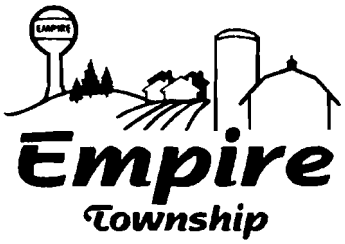
Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Elk River asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Sincerely,

Rebecca Haug
Environmental Administrator



May 23, 2012

Robert Finley
Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Drive
Suite 2165
Mankato, MN 56001

RE: Comments on Mississippi River Total Suspended Solids (TSS) TMDL

Dear Mr. Finley:

Empire Township has reviewed the draft Report for the South Metro Mississippi Total Suspended Solids Total Maximum Daily Load. The Township hereby officially requests consideration of the following concerns associated with the proposed TMDL allocation.

1. The report states "*that the required TSS reduction load for regulated MS4s results in an aggregate cost estimate of $850 million for the MS4s affected by this TMDL.*" Given the magnitude of these costs, it is imperative that MPCA postpone any required implementation plans until:
    a. Additional analyses regarding cost effectiveness are completed
    b. The local implications of establishing new policies are known.

    We are concerned that our upcoming MS4 permit will be scrutinized relative to this TMDL and that we will be penalized for failing to blindly implement presumed turbidity reduction measures at a significant cost to our constituents without knowing whether those strategies will be effective relative to the cost.

2. The math of the study does not make sense. The MS4's currently contribute 5.8% of the TSS load to the river. Reducing this by 25% is a 1.5% reduction in the load to the river. The margin of safety used in the calculation was 6%! It seems that $850 million for a 1.5% reduction in the loading does not make a lot of financial sense.

3. The proposed waste load allocation appears to be unfairly weighted toward current permitees (i.e., MS4s, municipalities with wastewater treatment plants, etc.) with the only justification being that only these entities are subject to enforcement. The Township believes that the waste load allocation should be fairly distributed to all load contributors regardless of whether the allocation is enforceable.

4. The constitutional amendment funding is a great source for assistance in the financing, but the funding is limited relative to the magnitude of the funding available for Municipal TMDLs. According to the MPCA website, the 2011 Legislative session allocated $47.77million to the Minnesota Pollution Control Agency. The website goes on to note that over the 2012-2013 biennium, this funding will be allocated as follows:

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restoration
- $4.27 million for Groundwater assessment and SSTS

From this it appears that more than half of MPCAs constitutional amendment monies are being spent monitoring and developing TMDLs and approximately 10% is allocated toward protection and restoration. If constitutional amendment funding is considered a potential financing mechanism to help permitees offset the high cost of the designated waste load allocation, and if the estimated total cost of the South Metro TMDL is $850 million, it will take over 330 years at the current $5.1 million restoration allocation per biennium to fully finance only the South Metro Mississippi Turbidity TMDL. Unless the allocation is redistributed to focus on restoration efforts rather than studies and tool development, Minnesota will have spent a significant amount of its Clean Water Fund to set TMDLs with comparatively insignificant funding allocated toward restoration.

Although there are more issues that should be addressed, we feel that the most important comment we can make is to request fair and equitable treatment of all contributors to the problem regardless of the enforceability. If the MPCA insists on unequal allocations, then the Clean Water Fund should grant opportunities should be similarly and unequally allocated.

We sincerely hope that all branches of the MPCA, including the MS4 permit reviewers, consider the inequality of the proposed TMDL when the next MS4 permit is reviewed.

Thank you for the opportunity to share our feelings on this matter.

Sincerely,

Terry Holmes

Township Chair

City of Farmington

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May 29, 2012

Mr. Robert Finley
Southeast Regional Manager
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

Dear Mr. Finley,

The City of Farmington (City) appreciates the opportunity to submit comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load (TMDL) Report. The City of Farmington lies wholly within the Vermillion River Watershed District and the drainage area for this TMDL, and therefore directly affected by its findings.

The City does have several concerns with the current draft TMDL as described below.

- Farmington is very concerned with the 25% load reduction required in this TMDL. The TMDL Report states that the permitted MS4s are only "very minor sources of sediment". Also, the Report states that reducing the load from the permitted MS4s "will not help to accomplish the goals of the TMDL in any measurable way." The load from the permitted MS4s is insignificant and the load reduction from the permitted MS4s will be unsuccessful in meeting the TMDL goals.

- The City believes that the TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. This is routine practice for "nested" TMDLs. Also the load reduction allocations vary significantly between the Minnesota River TMDL and the reduction listed in this TMDL. This should also be the case for the Lower Cannon River Turbidity TMDL and the Lower Vermillion Turbidity TMDL.

- Because the vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources, load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced. We are being required to spend tax dollars to achieve a reduction that the TMDL Report states will be insignificant and ineffectual toward meeting the TMDL goals. It would be a waste of public funds for the City of Farmington to expend taxpayer dollars if it proves to be impossible or impractical to achieve the much larger load reductions needed from the unregulated sources.

- Under this TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA is extremely similar to the proposal from 1992, in which no evident progress has been made, according to the MPCA's most recent biological assessment. Farmington is perplexed how the exact same approach

that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River.

- There is apprehension on part of the City regarding setting WLA's in relationship to flow conditions. This is due to there being little correlation between the TSS loading in urban discharges and the flow condition in the river and that TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Farmington has addressed flood control and has BMP's in place to settle out considerable amounts of solids. Farmington also feels that the flow condition in the Mississippi River will frequently be determined by a rain or snowmelt event that has occurred far upstream of our city. In that case, Farmington could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA.

- The City believes that the baseline for the WLA should be set with no BMP's in place. It seems that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the City of Farmington and all other MS4 WLA's.

The City has much at stake in the success of this TMDL, and looks forward to working cooperatively with the MPCA and other state and federal agencies to ensure that scarce resources are directed toward the most cost effective sediment reduction solutions.

Sincerely,

Kevin Schorzman, P.E.
City Engineer

CITY OF FRIDLEY

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May 29, 2012 PW12-023

Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

RE: Draft South Metro Mississippi River Total Suspended Solids TMDL Report

Via email

Mr. Finley:

The City of Fridley submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

If you have any questions or would like to discuss this matter further, please do not hesitate to contact by email at kosluchar j@ci.fridley.mn.us or by telephone at (763) 572-3552.

Regards,

James Kosluchar
Public Works Director/City Engineer

cc: Scott Lund, Mayor
William Burns, City Manager

JPK/jpk

Comments on the Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Fridley submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Fridley is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.

- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its

resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on*

water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These

boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate.

This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of

impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

<u>Statement of Action #8</u>

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

<u>Reasons or Proposed Findings #8</u>

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory

requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

<u>Reasons or Proposed Findings #12</u>

Please see above.

13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #13

    The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

    - The immense estimated cost to achieve the WLA
    - The load reductions for the MN River TMDL
    - The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

    These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

    Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

    "Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether

existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
    - Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
    - Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
    - Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the

underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Fridley asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

city of golden valley
7800 Golden Valley Road
Golden Valley, MN 55427

May 29, 2012

Mr. Robert Finley
MPCA
12 Civic Center Plaza
Suite 2165
Mankato, MN 56001

Subject: City of Golden Valley Comments on
Draft South Metro Mississippi River Total Suspended Solids TMDL Report

Dear Mr. Finley,

Attached are the City of Golden Valley's comments on the Draft South Metro Mississippi River Total Suspended Solids TMDL Report.

If you have any questions, please contact me at 763.593.8034.

Sincerely,

Jeff Oliver, PE
City Engineer

Enclosure

C: Larry Gunderson, MPCA

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city of golden valley
7800 Golden Valley Road
Golden Valley, MN 55427

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Golden Valley submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Golden Valley is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:
   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.

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- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the

issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

Statement of Action #4

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is

based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

"To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

- *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
- *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
- *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
- *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

   The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
   - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the

event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the

MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
   Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
   Developed, high density (more than 79 percent impervious) – 65,750 acres; and
   Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

   If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

   Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the

scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:
    - Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities

- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder

process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should

be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as *"an accounting of uncertainty about the relationship between pollutant loads and receiving water quality."* (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

    Reasons or Proposed Findings #19

    Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should

then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Golden Valley asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Hutchinson submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Hutchinson is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.

- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its

resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on*

water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These

boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate.

This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of

impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory

requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

<u>Reasons or Proposed Findings #12</u>

Please see above.

13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #13

    The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

    - The immense estimated cost to achieve the WLA
    - The load reductions for the MN River TMDL
    - The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

    These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

    Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

    "Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether

existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
    - Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
    - Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
    - Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the

underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Hutchinson asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

minnesota inter-county association

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February 21, 2013

Robert Finley
robert.finley@state.mn.us
Minnesota Pollution Control Agency

Dear Mr. Finley

Comments on Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The Minnesota Inter-County Association submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The Minnesota Inter-County Association represents several counties in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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3. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   —thdong-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #3

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *—Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *—No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #3

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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4. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the

soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.

- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 county or city. In that circumstance, the county or city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a county or city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #4

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #4

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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5. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #5

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #5

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
   Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
   Developed, high density (more than 79 percent impervious) – 65,750 acres; and
   Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all

- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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6. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

   Statement of Action #6

   Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

   Reasons or Proposed Findings #6

   MN Statute 114D.25 includes the following text:

   ~~(~~b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

   (1) a range of estimates of the cost of implementation of the TMDL; and

   (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

   By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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7. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

   Statement of Action #7

   Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

   Reasons or Proposed Findings #7

   Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not

sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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8. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    —In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:
    - Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
    - State and local funding will be directed toward improving water quality in the Minnesota River
    - The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    Please note the similarity of these bullet points to the bullet points in the paragraph just above.

    Statement of Action #8

    Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

    Reasons or Proposed Findings #8

    Please see above.

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9. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #9

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #9

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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10. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #10

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #10

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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11. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #11

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #11

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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12. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #12

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #12

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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13. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #13

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #13

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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14. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #14

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #14

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

Conclusion

The Minnesota Inter-County Association asks that the MPCA take the requested actions set forth in this submittal. The association further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Sincerely,

Keith E. Carlson,
Executive Director

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Inver Grove Heights submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Inver Grove Heights is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

   - Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.

- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its

resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on*

water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These

boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate.

This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of

impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory

requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

<u>Reasons or Proposed Findings #12</u>

Please see above.

13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #13

    The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

    - The immense estimated cost to achieve the WLA
    - The load reductions for the MN River TMDL
    - The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

    These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

    Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

    "Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether

existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
    - Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
    - Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
    - Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the

underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Inver Grove Heights asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

City of
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TO: Robert Finley, Pollution Control Agency
FROM: Cindy Patnode, Loretto City Clerk
DATE: May 29, 2012
RE: Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Loretto submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Loretto is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot

say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in

metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in

deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the

loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localized rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these

differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

   If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

   Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition

(page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears

that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*

- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the

permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

    Reasons or Proposed Findings #17

    The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?

- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based on information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The

TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the

USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Loretto asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

MESERB
Minnesota Environmental Science and Economic Review Board
Using science and economics to improve environmental regulations

May 29, 2012

Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

BY E-MAIL AND U.S. MAIL
robert.finley@state.mn.us

Re: Draft South Metro Mississippi River Turbidity Total Maximum Daily Load (TMDL) Report
Comments of the Minnesota Environmental Science and Economic Review Board (MESERB)

Dear Mr. Finley:

Thank you for the opportunity to offer the following comments on the draft South Metro Mississippi River turbidity TMDL report. MESERB is a joint powers organization of about 40 Minnesota cities, public utilities commissions and sanitary sewer districts. MESERB has worked since 1997 to ensure that regulations affecting wastewater treatment are reasonable and based on sound scientific research. Our members represent a combined 159 million gallons per day of wastewater treatment capacity. Twenty-three of our members are identified in Appendix A of the draft report as having wasteload allocations as a result of this TMDL. Similar comments are being submitted on the Minnesota River turbidity TMDL, and many of our identified concerns cut across both TMDLs.

First, MESERB requests a clarification to Appendix C. In October 18, 2004 correspondence to the MPCA, MESERB had expressed interest in participating in the TMDL development process in some form. MESERB subsequently appointed Bob Zimmerman from the City of Moorhead to the Science Advisory Panel, and Mr. Zimmerman has since completed his charge in this capacity. However, Appendix C also lists MESERB attorney Steve Nyhus and myself as members of the Stakeholder Advisory Committee. I served on the Stakeholder Advisory Committee in a very limited capacity and had little input into the TMDL discussions. MESERB had never appointed Mr. Nyhus to this committee and he attended one or two meetings simply to monitor the discussion. Since MESERB cannot endorse the end result, Mr. Nyhus and I would like our names removed from Appendix C.

MESERB's comments will be fairly short, since the TSS limit of 32 mg/L applicable to most facilities is above what our member facilities currently discharge (*see* pp. 53-54 and 62-64). In the event our members grow such that a facility's TSS discharge exceeds the allowed concentration, we would like to see assurance from the MPCA that the facility would be able to trade with point and/or nonpoint sources so as to offset the increased load and protect water

quality. Given their miniscule contribution to the impairment, some accommodation should also be made for lagoon facilities (of which two are MESERB members) so that their capacity for community growth is not unduly restricted.

The long-term TSS target of 32 mg/L is certainly an improvement over the onerous "not to exceed" approach used in the Minnesota River turbidity TMDL, but there remains a mismatch between reduction requirements applicable under high-flow conditions (such as spring runoff) when it is the June – September growing season, when flows are typically not as high, that MPCA is most concerned about promoting submerged aquatic vegetation growth.

Further, this TMDL does not adequately incorporate the substantial sediment reductions called for in the Minnesota River turbidity TMDL. If those reduction targets are achieved, it would seem to obviate the need for point sources to address load reductions upstream of the Metro area. These sources simply are not large enough to make any appreciable difference. That said, MESERB does appreciate the following statement on page 82:

> Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their wasteload allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their wasteload allocations will not help to accomplish the goals of the TMDL in any measurable way.

MESERB hopes that this assurance remains in the document that ultimately goes to EPA for approval, and we will be watching to make sure the state stays true to its word. As stated in our comments on the Minnesota River TMDL, MESERB is very concerned about the achievability of the TSS reduction targets in this TMDL given the overwhelming contribution of bluff and stream bank erosion, and unregulated nonpoint source runoff. MESERB would object to regulated point sources being subject to additional reductions based on this TMDL, when point sources have been demonstrated to be minimal contributors.

The biggest issue for cities in this TMDL is stormwater. Since MESERB does not work on stormwater issues we have left it to other stakeholders to describe stormwater impacts in more detail; however, it should be noted that 17 of the 23 members affected by this TMDL have municipal separate storm sewer systems (MS4s) identified in Appendix B. The cost estimate for TSS reductions from urban stormwater of $850 million, an eye-popping sum considering the amount of TSS load accounted for by MS4s. While we respectfully defer to our colleagues who have put greater analysis into this issue, MESERB similarly urges MPCA to put all necessary measures in place to address nonpoint and natural contributions to turbidity affecting Lake Pepin before requiring municipal MS4s to make enormous investments that will create no real improvement in water quality.

In light of the foregoing, MESERB recommends that this TMDL be amended 1) to remove my and Mr. Nyhus' name from Appendix C as we were never fully-participating members of the Stakeholder Advisory Committee, 2) to amend the targets to reflect seasonal conditions (*i.e.* spring high flows) as compared to the growing season conditions of concern, and 3) defer implementation of reduction requirements on municipalities unless and until the appropriate regulatory/voluntary measures are in place to address nonpoint and natural contributions to this impairment.

Written responses to the foregoing may be directed to my attention at 310 NW 37th Street, Rochester, MN 55901-3403. I can also be reached by phone at 507-328-2656 or by e-mail at dlane@rochestermn.gov. Thank you for your time and attention.

Yours Truly,

David C. Lane

David C. Lane, Environmental Coordinator
Rochester Water Reclamation Plant
MESERB President

cc: Steven W. Nyhus, Senior Attorney, Flaherty & Hood, P.A.
John C. Hall, Hall & Associates

Metropolitan Council

Environmental Services

May 23, 2012

Mr. Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

RE: South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Draft Report

Dear Mr. Finley:

The Metropolitan Council (Council) has completed its review of the draft South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL) report. The Council, as the designated area-wide water quality management planning agency under Section 208 of the federal Water Pollution Control Act, has a responsibility to ensure that adequate water quality management policies and programs are implemented. The Council has reviewed this draft TMDL report for consistency with Council policy and under our roles, responsibilities and authorities as the designated area-wide water quality management planning agency.

The Minnesota Pollution Control Agency (MPCA) is to be congratulated for a thorough analysis of turbidity levels and total suspended solids (TSS) loading in the South Metro Mississippi River watershed. With that said, Council staff have major concerns with the MPCA approach.

TMDLs demonstrate the need for an overall, coordinated, effort to improve the state's water quality. The current practice of doing separate TMDL studies for each impairment of a given waterbody is inefficient and potentially ineffective. Since resources and funding are clearly limited, MPCA should collaborate with local units of government and others to prioritize TMDL efforts on a statewide basis and then develop an implementation plan, including funding for those efforts. The agency should also plan to implement all TMDL mandated load reductions of all pollutants simultaneously for each given water body. Consideration of all pollutants would offer an opportunity for synergistic best management practices (BMP) implementation, which could result in more "bang for the buck", less onerous requirements on local stakeholders, and a more realistic chance of actually improving water quality.

The reductions in TSS from the Minnesota River basin are much larger than those required from the Mississippi River basin. It appears that cleaning up the Minnesota River is paramount to the successful implementation of this TMDL plan. Given the relatively small reductions from other river basins, a phased implementation approach should be taken, wherein significant reductions are realized along the Minnesota River basin before reduction requirements are implemented in the other river basins.

The management practices assumed in the modeled Scenario 4 for the Minnesota River watershed seem unrealistic and are poorly detailed. Scenario modeling results indicate that extremely aggressive load reductions are needed for nonpoint and point sources in order to meet the standards.

The report states that increases in flows from wastewater treatment plants with TSS effluent limits of less than 32mg/L are not likely to have an impact on any of the impaired reaches. Given that the Metropolitan Area is anticipated to grow by about 30% by 2040, and wastewater treatment will need to support this growth, the Metropolitan Council seeks to verify this statement and confirm that wastewater treatment reserve capacity will be available to accommodate the anticipated growth.

The loads calculated for the MS4s do not seem to be based on any local monitoring data; more detail is needed concerning these loads and the assumptions made in formulating them. The assumption that a suite of, yet to be devised, BMPs will result in uniform 25% reductions in MS4 loads if no monitoring data is used in their formulation or evaluation needs to be re-evaluated.

In addition, MS4 permit holders are estimated in the report to contribute only 6% of the TSS loads. The draft TMDL is requiring the MS4 permit holders to reduce their TSS load by 25% which creates an overall load reduction of only 1.5%. This is anticipated to cost the MS4 permit holders many millions of dollars. From an economic standpoint, it is not reasonable or cost effective to require this type of expenditure until significant progress is made on reaching the nonpoint source reductions.

Finally, MPCA and EPA should put this TMDL (and the Minnesota River Turbidity TMDL) on indefinite moratorium until the real world feasibility of the Minnesota River BMPs can be determined. Council staff stress the need for additional comprehensive research, monitoring, and modeling before the feasibility of the practices assumed in Scenario 4 can be determined as well as the feasibility of the overall TMDL load reductions. More detail on each of these issues is contained in the attachment.

If you have questions on these comments, please contact Keith Buttleman, MCES, Assistant General Manager at 612-602-1015.

Sincerely,

William Moore
General Manager, Environmental Services

Attachment

cc: Dan Ableson, Metropolitan Council Legal Dept.
Keith Buttleman, Assistant General Manager, MCES, Environmental Quality Assurance Dept.
Bryce Pickart, Assistant General Manager, MCES, Technical Services Dept.

Attachment: Additional Comments on the South Metro Mississippi River TSS TMDL Report

TMDL Development and Determination of Allocations

Section 6.8 (Future Growth and Wastewater Reserve Capacity) states that, "*As a result of population changes and contributions from industrial wastewater discharges, flows at some wastewater treatment facilities are likely to increase over time. This increase is not likely to have an impact on any of the impaired reaches because permits authorizing the vast majority of wastewater flow in the watershed contain calendar month average TSS effluent limits at concentrations that are below the 32 mg/L water quality standard. Therefore, increased flows from most wastewater treatment facilities will add to the overall loading capacity by increasing river flows.... This effect will be most pronounced in lower flows, when conventional point sources have the greatest impact. The increased flow will effectively increase the overall assimilative capacity of the river, as the flow increase will be larger proportionally than the load increase.*"

Given that the Metropolitan Area is anticipated to grow by about 30% by 2040, and wastewater treatment will need to support this growth, the Metropolitan Council seeks to verify this statement and confirm that wastewater treatment reserve capacity will be available to accommodate the anticipated growth.

Minnesota River Basin Reductions

Council staff have concerns about the feasibility of the Minnesota River basin reductions and the methodology used for the MS4 reductions.

The consultant used results of Scenario 4 from an updated Hydrologic Simulation Program Fortran (HSPF) model for the Minnesota River as input at Jordan. According to page 45 of the report, this scenario included the following:

Scenario 4 of the HSPF model incorporated the following set of practices (Tetra Tech, 2009):

- *Increase perennial vegetation to 20 percent of the watershed, targeting erosive areas downstream of nick points in the Blue Earth and Le Sueur watersheds, in particular.*
- *Implement conservation tillage on 75 percent of land with slopes greater than 3 percent, along with cover crops to reduce spring runoff.*
- *Eliminate all surface tile inlets.*
- *Follow University nutrient management recommendations.*
- *Use of drop structures on ravines to achieve 30-40 percent sediment loading reduction.*
- *Use controlled drainage on cropland with less than 1 percent slope, along with two-stage ditch design, storing the first inch of field and urban runoff for at least 24 hours.*
- *Stabilize stream banks and bluffs by reducing stream flow and scour.*

The model predicted that, "*...Minnesota River Scenario 4 would result in TSS load reductions at Jordan in the range of 40 to 60 percent, depending on the year and the season. Results on average were close to what is called for by the South Metro Mississippi TSS TMDL. Therefore, the model output was used as a refinement of South Metro Mississippi Scenario 17, providing more detail on the timing and extent of sediment loads at Jordan based on the above set of practices.*"

These practices represent a radical change from current land use in the basin. Increasing perennial vegetation, spring cover crops, and the use of conservation tillage will depend on cooperation of the agricultural producers and landowners in the basin, as will use of University nutrient recommendations. Does MPCA intend to institute these practices through purely voluntary measures? If not, what mechanism do they propose to use? With current commodity prices and production trends these changes are likely to meet some resistance, and voluntary adoption may not correspond with the target areas.

Elimination of surface tile inlets and 24 hour storage of runoff may make row crop production impossible on some of the heavier soils in the basin. Current drainage law supports the land owner's right to drain land for agricultural purposes, with no requirement for storage of runoff. How does MPCA intend to implement this practice? A worst-case scenario might require acquisition of these areas, which could be expensive, even if owners are willing.

How many, and what type of drop structures would be necessary to reduce ravine erosion by 30-40%? Is there any cost or effectiveness data for practices of this type on such a scale? Similarly, what measures does MPCA intend to use to stabilize stream banks and bluffs? Significant upland water storage would probably be needed in addition to any in-stream practices to make a noticeable reduction in scour, and stabilizing banks and bluffs will not, in itself, reduce stream flow.

Council staff stress the need for additional comprehensive research, monitoring, and modeling before the feasibility of the practices assumed in Scenario 4 can be determined as well as the feasibility of the overall TMDL load reductions.

Municipal Separate Storm Sewer Systems (MS4s)
Council staff has questions concerning the loads for municipalities with MS4s. These concerns involve the methodology used to estimate the 2002 loads for these areas, and the necessary reductions.

According to page 56, of the report:

The primary source of information for estimating sediment export from urban areas was "Review of Published Export Coefficient and Event Mean Concentration (EMC) Data," by the Environmental Laboratory of the U.S. Army Corps of Engineers..... Based on these data, the MPCA estimated an annual median export of 225 lbs/acre of TSS from low, medium, and high intensity land uses. This gives an annual export of 46,428 metric tons of TSS. This value was then reduced by 25 percent, which represents the required reduction for this TMDL. The resulting value of 34,821 metric tons was adjusted upward by 3 percent to account for growth since 2002. The resulting load is 35,866 metric tons.

The coefficients in this report are from many different studies, and show a great deal of variability. Exactly which coefficients were used, and why were they chosen? Was any recent or local monitoring data used in these estimates? We realize MPCA must estimate these loads somehow, but more detail should be provided in the report. Also, the 20% growth factor for MS4s based on the 1990-2000 time period (referred to on page 57) may be high, as it reflects the real estate boom years.

To achieve the MS4 reductions p. 57 states that,"*MS4 permittees will be deemed to be achieving their waste load allocation if they are in compliance with their NPDES permit.*" What is the basis for this assumption? Does this refer to the current permit, the pending revised permit, or some future permit?

Similarly, the report also states on page 57 that:

The TMDL implementation plan will describe a suite of BMPs that can be incorporated into the MS4 permit and will meet the waste load allocation by achieving an estimated 25-percent reduction from a baseline of 2002 loads.... Permittees may choose to implement management strategies not described in the TMDL implementation plan. In this situation, they are required to demonstrate that their Storm Water Pollution Prevention Program is meeting the waste load allocation. The waste load allocation equates to a 25-percent reduction in TSS loading from a baseline of 2002.

What is the basis for this assumption? Has any monitoring of MS4 loads, before or after 2002, been done? Will MPCA be required to demonstrate that their "suite of BMPs" will meet the waste load allocation for all MS4 permittees that adopt it?

Developing a general set of BMPs that will achieve a 25% reduction in current TSS loading may be possible, but the real question is where these BMPs will be applied, especially in fully developed areas. Given the current financial conditions of the cities, attainment of this goal seems unlikely to occur.

Also given that the MS4's are estimated to contribute about 6% of the total TSS load while the Minnesota River basin contributes about 75%, this requirement seems arbitrary, and feasible only because the MS4's are permitted, while agricultural producers are not. MPCA should consider collecting real data to establish loads and reductions for the MS4s.

Minneapolis
City of Lakes

Department of Public Works
Steven A. Kotke, P.E.
City Engineer
Director

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May 29, 2012

Robert Finley (*via* email to Robert.Finley@state.mn.us and US mail)
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

Subject: *Draft* South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load

Dear Mr. Finley:

The Minnesota Pollution Control Agency (MPCA) is requesting comments on the draft South Metro Mississippi Total Suspended Solids TMDL report (TMDL). The City of Minneapolis appreciates the opportunity to submit comments.

Statement of Interest: The City of Minneapolis is interested in the TMDL because the City of Minneapolis and the Minneapolis Park and Recreation Board are co-permittees on a Municipal Separate Storm Sewer System (MS4) permit under the National Pollutant Discharge Elimination System (NPDES) program. As proposed in the draft TMDL, the Minneapolis co-permittees would be subject to a Waste Load Allocation (WLA) for Total Suspended Solids (TSS) because of the turbidity impairment of the South Metro Mississippi River. If the TMDL is approved by the USEPA, The WLA would be enforced under the NPDES permit program.

Attached are Comments on the TMDL. The Minneapolis City Council has directed staff to submit the Comments on the TMDL and to submit a Petition for a Contested Case Hearing. The Petition for a Contested Case Hearing is being mailed today under separate cover, and is also being submitted to you *via* facsimile to 507-389-5422.

Please know, in addition, that the City of Minneapolis supports the efforts on this TMDL by the League of Minnesota Cities.

We request that the attached comments be taken into consideration and responded to as you begin revisions to the draft TMDL. The City of Minneapolis looks forward to working cooperatively with the MPCA to ensure that scarce public resources are committed wisely and cost-effectively in the restoration and protection of the state's water resources.

Sincerely and on behalf of the City of Minneapolis,

Steven A. Kotke, Director of Public Works and City Engineer

Cc:
Council Members
Mayor R. T. Rybak
Jayne Miller, Superintendent, Minneapolis Park & Recreation Board
Paul Aasen, City Coordinator
Susan L. Segal, City Attorney
Gene Ranieri, Intergovernmental Relations
Lisa Cerney, Director, Public Works Surface Water & Sewers Division

Attachment: Comments

ATTACHMENT: COMMENTS from the CITY OF MINNEAPOLIS

SUBJECT: *Draft* South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load

A: Load reduction requirements from the Mississippi River above Lock & Dam Number 1 are not warranted.

Supporting information:

The subject impairment of the South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL) Draft Report is turbidity, or cloudiness of the water. Turbidity is a measure of light refraction that affects photosynthesis in the water column, preventing sunlight from penetrating deeply enough into the water column to support and maintain photosynthetic activity, and therefore preventing a healthy community of Submersed Aquatic Vegetation (SAV). SAV is negatively impacted when algae, suspended sediment, and organic matter in the water increase turbidity. The draft Report explains that it is the smaller sediment particles, referred to as the "cohesive class", that are the significant contributor to turbidity and therefore SAV.

The Mississippi River upstream of the Minnesota River meets the water quality standard. As stated in the draft Report, water clarity is good in the uppermost segment of the South Metro Mississippi River (from Lock & Dam Number 1, also known as the Ford Dam, to the confluence with the Minnesota River). "*The river becomes suddenly turbid as it absorbs the heavy sediment load of the Minnesota River*" (draft Report page 5). The Minnesota turbidity standard TSS equivalent is 64 mg/L. The site-specific standard for TSS replacing the statewide turbidity standard for the South Metro Mississippi River is 32 mg/L TSS. The concentration at Anoka is 24 mg/L, well within the South Metro Mississippi River site-specific standard. The concentration at Lock and Dam Number 1 is even lower, at 20 mg/L. If the Minnesota River met water quality standards there would not be a TSS impairment in the South Metro Mississippi River. The focus of the TMDL should be totally on the Minnesota River Watershed. "*In fact, success of the TMDL will depend on achieving significant reductions in TSS from a few major subwatersheds in the Minnesota River Basin*" (draft Report page 66).

Proposed change:

a) The City requests that the MPCA remove the Mississippi River upstream of Lock and Dam Number 1, or upstream of the confluence with the Minnesota River, and focus the TMDL on only the tributaries that are directly contributing to a violation of the water quality standard. This approach is being used in the Mississippi River Bacteria TMDL, where watersheds of upstream reaches that meet the standard (in this case the *E. coli* standard) are removed from the TMDL boundary on the basis that, if the reach meets the

standard, it is not directly contributing to a violation of the downstream reach's water quality standard (personal communication, EOR staff).

OR

b) The City requests that no load reductions be required from the Mississippi River above Lock and Dam Number 1 as the turbidity is currently meeting water quality standards. This includes no reductions from existing loads for regulated MS4s. This approach was used for the Lower Vermillion River Watershed Turbidity TMDL and was approved by the USEPA.

B: A 25 % reduction in Total Suspended Solids (TSS) by regulated MS4s is not warranted.

Supporting information:

The draft Report proposes requiring all local governments with a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit to reduce their contribution of TSS by 25%. The decision to require a 25% reduction by MS4s (and MS4s only) is arbitrary and ineffectual. There is no evidence that it is derived from scientific data or modeling results that support this requirement. There is no evidence that a 25% reduction by MS4s would make any significant contribution to reducing the elevated TSS levels in the impaired section of the river that is the subject of the TMDL requirement. Minnesota Statutes, Section 114D.25 states, "*A TMDL must include a statement of the facts and scientific data supporting the TMDL* [equation] . . .". MPCA staff has agreed that statements such as on page 56 – that "*25 percent . . . represents the required reduction for this TMDL*" – are incorrect because the 25 % is not based on facts and scientific data, because no modeling scenarios were used with MS4 reductions set at zero, and if modeling had been done with reductions shown at zero, it would show that no reduction is needed.

The proposed Waste Load Allocation (WLA) for permitted MS4s is not supported by the Lake Pepin/Upper Mississippi River model report. MPCA staff has explained that the 25% reduction by MS4s is intended to satisfy possible equity issues.

A TMDL should have reasonable assurance of improving water quality and more importantly improving water quality to the extent that the subject water body can be removed from the list of impaired waters. The credibility of the TMDL hinges on following good science to actually improve the water quality of an impaired water body. For this TMDL, however, urban land uses are essentially irrelevant to the impairment and to potential removal of the water body from the list of impaired water bodies. It is being proposed that the MS4s spend $1 billion ($850 million for this TMDL and $175 million for the companion Minnesota River TMDL) to remove what appears to amount to 1.37% of the pollutant of concern, based on the estimate of TSS from urban runoff used in the draft Report. Thus the proposed 25% reduction by MS4s at an estimated cost

of $1 billion will not even cause an appreciable reduction of the impairment. Expenditures of $1 billion pursuant to the plan will not bring about any change that will be noticed either visually or in terms of physical effect on the environment. No amount of reduction by MS4s would. Spending public money to accomplish nothing is not good public policy.

The TMDL Study refers to unprecedented funding from the Minnesota Clean Water Fund. While unprecedented, the funds are not unlimited. The Clean Water Fund is supported by a sales tax that is applied statewide, including within MS4 jurisdictions, equitably distributing the sales tax burden. With the potential of billions of dollars at stake, we believe the MPCA should include cost-benefit analysis on behalf of efficiency for the State of Minnesota, even though not required by the USEPA. A cost-effective TMDL approach is owed to the taxpayers. It should concentrate on high-contributing sediment sources areas and be coupled with cost-effective solutions. Modeling and cost-benefit analysis were not used to develop modeling scenarios that would aid in finding cost-effective solutions.

In addition to any money spent out of the Clean Water Fund, we can envision Minneapolis ratepayers spending tens of millions of dollars to accomplish nothing in regard to improving the turbidity problem in the South Metro Mississippi River. Meanwhile there is and will continue to be competition for Minneapolis dollars for Best Management Practices (BMPs) and activities related to other TMDLs that are more directly associated with urban runoff and to maintain and improve our MS4 and its receiving waters.

The draft Report underscores that urban runoff is an insignificant portion of the pollutant load. However the proposed WLA would constitute a large legal mandate for cities, as Waste Load Allocations are enforceable under NPDES MS4 Permits.

Proposed change:

MPCA has the authority to change the Waste Load Allocation for MS4s. The City proposes that the MPCA make the following change to the Waste Load Allocation for MS4s:

> Eliminate the 25% reduction for MS4s and instead focus on the most cost-effective measures for directly improving the impaired water body.

C: The proposed baseline of 2002 is unwarranted.

Supporting information:

A TMDL Study is required to have a clearly defined baseline. Examples are a specific year or a specific Best Management Practices (BMP) condition (Technical Guidance Used by MPCA to Develop Policies for Setting TMDL WLAs for Regulated Stormwater, MPCA, August 2010, page 21). For a required reduction under an approved TMDL, to get credit for demonstrating

compliance, an MS4 may be required to provide an accounting of BMPs undertaken after the baseline.

Using the year 2002 would penalize entities that have been undertaking water quality projects and programs for a very long time. Minneapolis applied for an MS4 permit on November 18, 1991 and had already been carrying out BMP activities. Minneapolis' first MS4 permit (along with Saint Paul's) was eventually granted on December 1, 2000. Many BMPs were implemented prior to 2002. Using the year 2002 could unfortunately act as a disincentive that would necessitate MS4s, with limited resources, postponing additional BMP projects and programs until required by regulation to do so, rather than being proactive stewards of water resources.

Rather than a specific year such as 2002, the preferred alternative is for MPCA to use as a baseline a specific BMP condition of "no BMPs". This approach is consistent with the Technical Guidance referred to above. This concept was the working concept for at least some of the stakeholder meetings, and would allow credit for all water quality projects.

Base years if needed are the earliest years from which the modelers took data as they created and calibrated the model. With little or no calibration having been performed for urban runoff, there are no data supporting the selection of 2002 as a base year upon which to base reduction requirements. The rationale expressed on page 57 of the draft TMDL Study is that 2002 corresponds to the 86th percentile flow condition used to calibrate the model. However selection of the base year for its flow characteristics is irrelevant, since urban runoff loadings do not fluctuate based on Mississippi River flow conditions.

<u>Proposed change:</u>

The City proposes that the MPCA make the following change.

a) Set the baseline as the "no BMPs" condition (preferred). This means that the baseline conditions for the purposes of the TMDL should be the conditions that existed in an MS4 jurisdiction prior to the implementation of stormwater best management practices (BMPs) by the MS4 jurisdiction regardless of the date of formal permitting.

   OR

b) Set the baseline at 1985, the start of the period of monitoring data used for modeling. Minneapolis does not want to be penalized by disallowing past projects from counting toward compliance. As addressed earlier, selection of 1985 as the baseline does not compromise the TMDL.

D. Reasonable assurance of nonpoint source controls

Supporting information:
Reasonable assurance language is a requirement of the TMDL and is meant to ensure that the proposed pollutant loads are achievable, so that the proposed implementation will lead to removing the subject water body from the list of impaired water bodies. Due to the extreme contribution of pollutant loadings from unregulated nonpoint sources, there is not reasonable assurance in the draft Report that the proposed implementation of this TMDL is achievable.

This leads to an additional concern for MS4s. Page 82 of the draft Report states, "*Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. . . . [T]hese are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way*." This appears to be a reassuring paragraph, because it means that the MPCA will not increase reduction requirements by regulated MS4s, even if after a period of time the nonpoint source targets have not been met, since it would not help to accomplish the goals of the TMDL in any measurable way. We wonder, however, if the next section of the draft Report suggests that the MPCA may sometime in the future look to MS4s for help in funding nonpoint source target activities, even though (as quoted above) the MPCA states it will not further reduce the MS4 waste load allocations. The language about which we are concerned is this:

"*Rather, contingency requirements to be implemented if nonpoint source targets are not met will focus on nonpoint sources themselves. They could take the form of:*

- ***access to funding by local units of government . . .*"** [emphasis added]
- [this is followed by other bullet points]

Does this first bullet point suggest that local units of government that are regulated MS4s could be required to fund reduction from nonpoint sources under this contingency?

Proposed change:

The City proposes that the MPCA make the following change. The bullet point "*access to funding by local units of government*" needs to be clarified that it does not mean required funding by regulated MS4s for reduction of nonpoint sources.

E. Insufficient cost estimates, insufficient clarity about cost estimates

Supporting information:
Minnesota Statutes, Section 114D.25 states, *"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including: (1) a range of estimates of the cost of implementation of the TMDL; and (2) for point source, the individual wasteload data and the estimated cost of compliance addressed by the TMDL*." By including a cost estimate only for achieving the MS4 Waste Load Allocation, this draft Report does not fulfill this statutory requirement. This TMDL Report should be revised to include a range of cost estimates to achieve all the allocations, including the Load Allocations.

It is unclear how the figure of $850 million, used as the projected cost of a 25% reduction by all regulated MS4s affected by this TMDL, was derived. It is unclear how estimated costs for MS4s might vary as a consequence of flow conditions expressed in Table 7. It is unclear whether the as-yet undeveloped "*set of BMPs*" described in Section 7.2.3, "*Urban Stormwater Best Management Practices*", will be feasible and prudent for fully developed, high density MS4 cities. It is unclear whether the flow conditions expressed in Table 7 might override Section 7.2.3.

It is also unclear whether the figure of $850 million includes or excludes the Minnesota River-tributary MS4s. This draft Report, for the South Metro Mississippi River, states that the companion TMDL, for the Minnesota River, will be more restrictive. The companion draft Report uses a figure of $175 million for regulated MS4s affected by that TMDL. The Minnesota River MS4s are affected by this South Metro Mississippi River TMDL as well. If the Minnesota River MS4s spend the $175 million to meet their Minnesota River TSS Waste Load Allocations, it appears they will have met their South Metro Mississippi River TSS Waste Load Allocations as well. The relevance of this question is how to better understand cost implications for an MS4 outside of the Minnesota River drainage area, if one uses the $850 million estimate as a guide.

Proposed changes:

The City proposes that the MPCA make the following changes. The MPCA should include "*a range of estimates of the cost of implementation of the TMDL*" that addresses all allocations, including the Load Allocations. Additionally the MPCA should add considerably more transparency and clarity in regard to the $850 million estimate for MS4s as the proposed Waste Load Allocations would constitute a large legal mandate for cities, as Waste Load Allocations are enforceable under NPDES MS4 Permits.

F. Higher-Density Development Reduces Pollutant Loadings per Person

Supporting information:
The USEPA document titled, *Protecting Water Resources with Higher-Density Development* (2009) and other recent publications discuss density as a stormwater Best Management Practice.

From the USEPA guidance document: "*EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated: The higher-density scenarios generate less stormwater runoff per house at all scales – one acre, lot, and watershed – and time series build-out examples; and for the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development.*"

An article in the Journal of the American Water Resources Association states that building a denser city may be the single most important practice any city can undertake to improve stormwater runoff, because "*higher density actually reduces pollutant loadings per capita and thus total loadings for a given population.*" (*Is Denser Greener? An Evaluation of Higher Density Development as an Urban Stormwater –Quality Best Management Practice,* Jacob, John S. and Ricardo Lopez, 2009).

Proposed change:

> The City proposes that the MPCA revise Waste Load Allocation load reductions and target loading rates for MS4 cities with higher-density development. The Waste Load Allocation numbers should be revised to reflect the value of higher-density development in protecting water quality. In considering density, the MPCA should include density factors beyond population. High-density development can also include commercial, industrial and other types of land uses.

G. Additional comments:

1) There are ways that additional clarification of terminology and calculations would be very helpful.

   G. 1.a) Where the term "Upper Mississippi" appears in the document, please clarify the area being referred to, because it is sometimes unclear whether the "metroshed" is included or is not included. Although the two terms are exclusive according to the definitions on pages 19 and 28 of the draft TMDL Study *, in some places "Upper Mississippi" appears to include the "metroshed", and in some places it is unknown how the term is being used.

* Page 19 defines the "Upper Mississippi River Basin" for the purposes of this study as the land area that drains to Mississippi River Mile 871, near the Anoka dam. Page 28 defines the "Metroshed" as the area that drains to the section of the river between River Miles 871 and 844.

G. 1.b) It would be helpful if the MS4 impervious acreage of all MS4s shown in Table 3 were broken down, at least by tributary.

G. 1.c) Please clarify what is included in calculations for "MS4 Impervious Surfaces" and "MS4 Area (impervious and pervious areas)" on Table 3.

G. 1.d) Please clarify what is included in calculations for the four bullets on page 56: "Developed, low intensity", "Developed, medium intensity", "Developed, high density", and Developed, open space".

2) The somewhat extensive public participation described in the draft Report was primarily related to the Lake Pepin TMDL. By comparison, the separate South Metro Mississippi River Turbidity TMDL had very little MS4 and other stakeholder involvement.

3) The draft Report states on page 6 that the Metropolitan Council began the separation of combined sanitary sewers and storm sewers in 1986. To clarify, what the Metropolitan Council began to do in 1986 was coordinate federal and state funding for an accelerated program in Minneapolis and other cities. Please add to the text that the City of Minneapolis began its separation in 1960.

[end]

Minneapolis
City of Lakes

Office of the City Attorney

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May 29, 2012

John Linc Stine, Commissioner
Members of the Board
Minnesota Pollution Control Agency
520 Lafayette Road North
Saint Paul, MN 55155-4194

Re: *In the Matter of the Proposed South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL)*

Dear Commissioner and Members of the Board:

Enclosed and hereby served upon you in connection with the above matter are the following:

1. Petition for a Contested Case Hearing by the City of Minneapolis; and
2. Comments of the City of Minneapolis.

Yours very truly,

Corey M. Conover

COREY M. CONOVER
Assistant City Attorney
(612) 673-2182

enclosures

cc: Robert Finley, via facsimile and U. S. mail

STATE OF MINNESOTA

MINNESOTA POLLUTION CONTROL AGENCY

In the Matter of the proposed South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL)	**PETITION FOR A CONTESTED CASE HEARING BY THE CITY OF MINNEAPOLIS**

The City of Minneapolis petitions for a contested case hearing in the above-referenced proceeding pursuant to Minnesota Rules and Minnesota Statutes as follows:

1. The City of Minneapolis is a home rule charter city under the laws of the State of Minnesota.

2. The Minnesota Pollution Control Agency (MPCA) has determined that a section of the Mississippi River, that the MPCA calls the "South Metro Mississippi", that is from River Mile 844 at the confluence with the Minnesota River to River Mile 780 in upper Lake Pepin is impaired for turbidity.

3. The MPCA is proposing the establishment of a Total Maximum Daily Load (TMDL) for Total Suspended Solids (TSS) for waters tributary to this section of the River.

4. The watershed for the South Metro Mississippi encompasses half the state of Minnesota and part of the northwest and west-central Wisconsin. It includes the City of Minneapolis.

5. One of the point source control strategies outlined in the public notice draft of the TMDL is to include in Municipal Separate Storm Sewer System (MS4) permits for MS4s located in the South Metro Mississippi watershed a standard set of Best Management Practices (BMPs) to achieve a 25 %TSS load reduction in urban runoff from baseline conditions. These BMPs will result in substantial costs to the City of Minneapolis and other MS4s. The public notice draft

suggests alternatively that MS4s could reach compliance by showing that pollutant loads from their MS4 meet a target load of 169 lbs/acre/year from developed areas and 112.5 lbs/acre/year from newly developed areas. It is anticipated that reaching these targets would also result in substantial costs to the City of Minneapolis and other MS4s.

6. Minneapolis has a storm sewer system and has a Municipal Separate Storm Sewer System (MS4) permit. The City of Minneapolis would be included in this proposed requirement or in the proposed alternate requirement. The City does not agree that these requirements, as proposed in the public notice draft of the TMDL, are appropriate, are supported by substantial evidence or otherwise permitted by law. The City of Minneapolis alleges that this proposed requirement is arbitrary or capricious within the meaning of Minnesota Statutes, Section 14.69 (f).

7. The public notice draft arbitrarily sets a baseline date of 2002 to measure reduction of TSS even though Phase 1 NPDES MS4 Cities had applied for MS4 permits in the early 90's and had been implementing BMPs for over a decade and beyond in contrast to Phase 2 NPDES MS4 cities that had not yet acquired MS4 permits.

8. Based on the TMDL study that estimates very roughly that a 25% reduction from base year conditions will cost an estimated $843,295,000, it is estimated that Minneapolis costs in implementing the TMDL as outlined in the public notice draft could be tens of millions of dollars. Minneapolis has a strong financial interest in crafting a legal and appropriate TMDL.

9. Minneapolis is a City located on both sides of the Mississippi River that contains many lakes, ponds and streams. Minneapolis has long had an interest in the water quality of its surface waters. Minneapolis has worked for years on improving surface water quality. Minneapolis has a strong interest in researching, planning, developing, and implementing effective techniques for improving surface water quality using reasonably available resources. Minneapolis believes that

the current public notice draft for this TMDL is, in part, inconsistent with that interest. Minneapolis has a strong environmental planning interest in crafting an appropriate TMDL.

10. The City disputes the conclusions of the TMDL draft as it relates to MS4s, like Minneapolis, that have all of their stormwater outlets upstream of Mississippi River Lock and Dam Number 1 (also known as the Ford Dam) and disputes various facts or factual inferences upon which those conclusions are based.

11. The Mississippi River upstream of the Minnesota River meets the site-specific water quality standard for TSS for the South Metro Mississippi River. As stated in the draft TMDL Study, water clarity is good in the uppermost segment of the South Metro Mississippi (Lock & Dam Number 1 to the confluence with the Minnesota River). "The river becomes suddenly turbid as it absorbs the heavy sediment load of the Minnesota River."

12. The state turbidity standard TSS equivalent is 64 mg/L. The site-specific standard for TSS replacing the statewide turbidity standard for the South Metro Mississippi River is 32 mg/L TSS. The concentration at Anoka is 24 mg/L, well within both the State and the South Metro Mississippi River standards. The concentration at Lock and Dam Number1, (just below the most downstream outlet of the Minneapolis storm sewer outlets into the Mississippi River) for TSS is even lower, at 20 mg/L. Water clarity is good in this segment.

13. The City of Minneapolis storm sewer system is not causing or increasing the impairment in the South Metro Mississippi.

14. If the Minnesota River met water quality standards there would not be turbidity impairment in the South Metro Mississippi River. The South Metro Mississippi River TMDL requirements should be applied only to the reaches or tributaries that are directly contributing to a violation of the subject water quality standard. The TMDL study states: "In fact, success of the TMDL will depend on achieving significant reductions in TSS from a few major subwatersheds

in the Minnesota River Basin". It is not reasonable to conclude, as the TMDL necessarily does, that reductions in TSS by MS4s located upstream of Lock and Dam Number 1, where the TSS standard is exceeded on the good side by 8 mg/L, will make any significant contribution to eliminating the turbidity impairment in the South Metro Mississippi. There is no reasonable scientific basis for imposing this requirement on these MS4s. There is other work for many of these MS4s to do in eliminating other water quality impairments.

15. A. There is no evidence that this requirement is supported by or derived from scientific data or modeling results. There is no evidence that a 25% reduction by MS4s would make any significant contribution to reducing the elevated TSS levels in the impaired section of the river that is the subject of the TMDL requirement. Minnesota Statutes, Section 114D.25 states: "A TMDL must include a statement of the facts and scientific data supporting the TMDL [equation] . . .". MPCA staff has agreed that statements such as on page 56 – that "25 percent . . . represents the required reduction for this TMDL" – is incorrect because the 25 percent is not based on facts and scientific data because no modeling scenarios were used with MS4 reductions set at zero, and if modeling had been done with reductions shown at zero, it would show that no reduction is needed.

B. The WLA for permitted MS4s is not supported by the Lake Pepin/Upper Mississippi River model report. MPCA staff has explained that the 25% reduction by MS4s is intended to satisfy possible equity issues. There is no legal or scientific support for imposing such a requirement.

C. It is being proposed that the MS4s spend $1 billion ($850 million for this TMDL and $175 million for the companion Minnesota River TMDL) to remove what appears to amount to 1.37% of the pollutant of concern, based on the estimate of TSS from urban runoff used in the draft TMDL Study.

D. The proposed 25% reduction by MS4s at an estimated cost of $1 billion will not bring about any change that will be noticed either visually or in terms of physical effect on the environment.

16. A. A TMDL Study is required to have a clearly defined baseline. Examples are a specific year or a specific Best Management Practices (BMP) condition (Technical Guidance Used by MPCA to Develop Policies for Setting TMDL WLAs for Regulated Stormwater, page 21, MPCA August 2010). For a required reduction under an approved TMDL, to get credit for demonstrating compliance, an MS4 will be required to provide an accounting of BMPs undertaken after the baseline. Using the year 2002 as the baseline would penalize entities that have been undertaking water quality projects and programs for a very long time. These entities would then be forced to spend substantial amounts of money for little gain, because the inexpensive improvements per unit of improvement have already been made by them. At the same time, entities that have not done anything will not be required to bring themselves up to the same standards as those who have started earlier.

B. Rather than use a specific year such as 2002 as a baseline, the appropriate method is for MPCA to use a specific BMP condition which is consistent with the Technical Guidance referred to above. Thus a required reduction for MS4s can be from a "no BMPs" condition. This concept was the working concept for at least some of the stakeholder meetings, and would allow credit for all water quality projects.

C. With little or no calibration for urban runoff, there are no data supporting the selection of 2002 as a base year upon which to base reduction requirements. The rationale expressed on page 57 of the draft TMDL Study is that 2002 corresponds to the 86th percentile flow condition used to calibrate the model. However selection of the base year for its flow characteristics is irrelevant since urban runoff loadings do not fluctuate based on Mississippi River flow

conditions. The City does not agree that the use of this baseline year, as proposed in the public notice draft of the TMDL, is appropriate, is supported by substantial evidence or otherwise permitted by law. The City of Minneapolis alleges that the use of this baseline year is arbitrary or capricious within the meaning of Minnesota Statutes, Section 14.69 (f).

17. Reasonable assurance language is a requirement of the TMDL Study and is meant to ensure that the proposed pollutant loads are achievable, so that the proposed implementation will lead to removing the subject water body from the list of impaired water bodies. Due to the extreme contribution of pollutant loadings from unregulated nonpoint sources, there is not reasonable assurance in the draft TMDL Study that the proposed implementation of this TMDL is achievable.

18. The City of Minneapolis in addition to the foregoing allegations, specifically disputes, inter alia, the following allegations:

A. The allegation in Sections 6.0, 7.0, and 7.1 that a 25% TSS load reduction from regulated MS4 communities (or the alternative TSS load requirements) will be effective in eliminating the TSS impairment in the South Metro Mississippi River and that there are facts that support such a conclusion.

B. The allegation in Sections 6.0 and 7.2.3, that the year 2002 is a factually supported and appropriate baseline date for MS4 TSS reductions.

C. The allegation in Section 7.2.3 that the year 2002 represents a no BMP condition for MS4s particularly as applied to the City of Minneapolis and dispute factual allegations and inferences regarding the Minneapolis permit.

19. There are material issues of fact in dispute concerning the proposed TMDL.

20. The Board has jurisdiction to make a determination on the disputed material issues of fact.

21. There is a reasonable basis underlying the disputed material issues of fact raised in this Petition, the attached comments, and the comments and allegations of other commenting and petitioning entities such that the holding of a contested case hearing would allow the introduction of information that would aid the board in resolving the disputed facts in making a final decision on the TMDL.

22. Petitioner intends to examine the following witnesses: (1) the preparers of the TMDL study and experts produced or relied on by them regarding the factual and scientific basis for ordering MS4s including MS4s above Lock and Dam Number 1 to reduce TSS by 25% from 2002 levels or in specified amounts and on the basis for choosing 2002 as a base year along with more general questions about the primary sources of TSS impairment in the South Metro Mississippi and the draft TMDL; (2) experts identified and presented by other petitioning parties on the same issues; (3) engineers and/or staff of the Minneapolis Department of Public Works, in part on the same issues and to testify regarding BMPs already implemented by the City of Minneapolis, the timing of that implementation and regarding the history and extent of stormwater management implementation in Minneapolis.

23. By action of May 25, 2012, the Minneapolis City Council has authorized the Minneapolis City Attorney to file a Petition for a Contested Case Hearing in this matter.

WHEREFORE, the City of Minneapolis, through the undersigned, asks for:

1. A contested case hearing pursuant to Minnesota Rules, Part 7000.1900 and other relevant authority, with all of the rights of a party as provided by law.
2. A determination that TMDL requirements for TSS should be applied only to the Minnesota River Watershed.

3. A determination that a 25% reduction in TSS for NPDES MS4 permit holders should not be imposed as part of the TMDL.
4. A determination that MS4s will not be required to show that pollutant loads from their MS4 meet a target load of 169 lbs/acre/year from developed areas and 112.5 lbs/acre/year from newly developed areas.
5. Alternatively, a determination that a 25% reduction in TSS for NPDES MS4 permit holders with outlets above Lock and Dam Number 1 (also known as the "Ford Dam") should not be imposed as part of the TMDL.
6. Alternatively, a determination that MS4 permit holders with outlets above Lock and Dam Number 1 will not be required to show that pollutant loads from their MS4 meet a target load of 169 lbs/acre/year from developed areas and 112.5 lbs/acre/year from newly developed areas.
7. Alternatively, a determination that any reduction in TSS load from NPDES MS4 permit holders be from a "no BMPs" condition so that all "BMPs" would be counted in determining whether there has been a 25% reduction.
8. Proposed Findings pursuant to and consistent with the allegations and requests of this Petition and the attached Comments.

Date: May 29, 2012

Respectfully submitted,

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By

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CITY OF Monticello ENGINEERING

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Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Monticello submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Monticello is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot

say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A,*

compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".

- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
• Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
• Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
• Developed, high density (more than 79 percent impervious) – 65,750 acres; and
• Developed, open space (less than 20 percent impervious) – 154,600 acres."

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4

conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff

compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

   The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :

- There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

<u>Statement of Action #8</u>

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and

Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:
    - Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
    - State and local funding will be directed toward improving water quality in the Minnesota River
    - The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    Please note the similarity of these bullet points to the bullet points in the paragraph just above.

    <u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

    Reasons or Proposed Findings #13

    The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

    - The immense estimated cost to achieve the WLA
    - The load reductions for the MN River TMDL
    - The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

    These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:

- *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
- *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
- *For a given amount of growth, lower-density development impacts more of the watershed.*

Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include

an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?

- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Monticello asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

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Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of North Mankato submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of North Mankato is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

   A list of some of the flaws of this TMDL is provided in the comments below. They include:

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
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- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
(507) 625-4141

2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and*

maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".

- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
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Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:

- *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
- *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
- *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
- *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
(507) 625-4141

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
(507) 625-4141

Reasons or Proposed Findings #6

It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for “nested” TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
(507) 625-4141

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.
    - TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
    - In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
North Mankato, MN 56002-2055
(507) 625-4141

loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

City of North Mankato
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Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements

in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the

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higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Statement of Action #13

    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

City of North Mankato
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North Mankato, MN 56002-2055
(507) 625-4141

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

City of North Mankato
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North Mankato, MN 56002-2055
(507) 625-4141

14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

    The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

City of North Mankato
1001 Belgrade Avenue, P.O. Box 2055
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Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

City of North Mankato
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Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

City of North Mankato
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Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

City of North Mankato
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obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

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Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

City of North Mankato
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Conclusion

The City of North Mankato asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

4646 Dakota Street SE
Prior Lake, MN 55372

May 29, 2011

Robert Finley
Minnesota Pollution Control Agency
520 Lafayette Road North
St, Paul, Minnesota 55155-4194

RE: Draft South Metro Mississippi River Total Suspended Solids TMDL Report

Mr. Finley:

The City of Prior Lake submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Prior Lake is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA:** The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target:** The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:
   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

Statement of Action #4

The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

- Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
- Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

   Reasons or Proposed Findings #5

   The boundaries for the permitted cities are flawed in at least three significant ways:
   - The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
   - Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the

underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions:** Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls

Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Statement of Action #7

   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

   Reasons or Proposed Findings #7

   The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

   The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
   - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can

be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs:** The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

   Statement of Action #9

   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

   Reasons or Proposed Findings #9

   The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

   "Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;
   Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;
   Developed, high density (more than 79 percent impervious) – 65,750 acres; and
   Developed, open space (less than 20 percent impervious) – 154,600 acres."

   In the following scenario, it appears that the following two land areas would be identical model inputs:

   - Two residential developments
   - Same total land area
   - Same percentage of impervious area
   - One built in 1960 with no stormwater BMPs at all
   - The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

   If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

   Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In

light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided:** This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

    By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges:** It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

    "In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."

    Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

Statement of Action #12

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual:** The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load

reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment"*. Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

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16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated

urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions:** The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

19. **Margin of Safety vs. MS4 WLA:** The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as *"an accounting of uncertainty about the relationship between pollutant loads and receiving water quality."* (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

    Reasons or Proposed Findings #19

    Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States:** This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should

then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Prior Lake asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Thank you for the opportunity to submit these comments.

Sincerely,
City of Prior Lake

Katy Gehler, PE
Public Works Director

Cc: Frank Boyles, City Manager

SCOTT COUNTY COMMUNITY SERVICES DIVISION
GOVERNMENT CENTER · 200 FOURTH AVENUE WEST · SHAKOPEE, MN 55379-1220

May 22, 2012

Mr. Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, Minnesota 56001

Re: Comments of the Draft South Metro Mississippi Total Suspended Solids Total Maximum Daily Load (TMDL) Report and Petition to Address the MPCA Citizen's Board and for the MPCA Citizen's Board to consider the TMDL report approval

Dear Mr. Finley:

Scott County has an interest in the draft TMDL report for three reasons:

1. The County holds an NPDES (municipal storm water or wastewater) permits and is affected by the Waste Load Allocations (WLA) developed in the report.
2. The Minnesota River, identified as the primary source of TSS, forms the north and west boundaries of the County.
3. Land use in the County is primarily agricultural and is affected by the Load Allocations developed in the report.

The County requests two actions. First, the County petitions to address the MPCA's Citizens Board. Second, the County requests the Citizens Board withhold approval until additional analyses regarding cost effectiveness are completed, and policy implications are more broadly discussed.

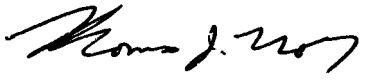
The reasons for these requests are listed below. Basically, the report does not provide sufficient basis for making informed decisions, and as a result promotes poor public policy and inefficient solutions. We understand that cost-benefit analysis may not be a requirement of the USEPA for TMDLs. That, however, does not absolve the MPCA from being efficient and representing the State of Minnesota – particularly when the decisions affect billions of dollars.

1. The report used a TSS export coefficient averaged from values reported by the USACOE. This yield is then multiplied by the acreage of urban area to estimate the urban load from the Metro area. Typically export coefficients are just that – export from a unit area of land, and they do not necessarily reflect the amount discharged to a receiving water. Their use without consideration of trapping, filtering or sedimentation in features along the flow path will likely lead to significant overestimates. This is demonstrated through review of the work of Dr. Kloiber at the Metropolitan Council in 2006 that showed much smaller TSS yields for the Metro area using actual monitored data than was assumed from the USACOE values. This means that the six percent load estimate attributed to the Metro area is likely significantly overstated. Dr. Kloiber's work, or more current results from the Metropolitan Council, should be used for this analysis. If used, it shows that the MS4 Metro contributions are a deminimus source and should be treated the same as the waste water sector.

2. Significant policy, governmental efficiency, and financial/taxing decisions are being made in this report that affect almost half the state of Minnesota. However, the report does not disclose the full cost of meeting the TMDL. In addition, there is no cost-benefit analysis or means of determining whether the proposed implementation is cost effective or even achievable.
3. The report actually promotes inefficiency. Metro area Municipal Separate Storm Sewer System (MS4) permit holders are estimated in the report as contributing only six percent of the Total Suspended Solids (TSS) Load. However, the TMDL requires a 25 percent TSS reduction from the MS4 permit holders. This will create an overall load reduction of only 1.5 percent. However, the estimated cost according to the report is approximately $830 million. From a public policy perspective, this does not make any sense.

Scott County shares a common interest in having clean water and looks forward to discussing this matter with the MPCA Citizens Board once a cost benefit analysis is completed. With such an analysis, we are confident that we can jointly find an efficient means of meeting reasonable water quality objectives for the Mississippi River. Correspondence with the County can be sent to Paul Nelson, Scott County Natural Resources Program Manager, at 200 Fourth Ave W., Shakopee, Minnesota, 55379-1220 or via e-mail at pnelson@co.scott.mn.us.

Sincerely,



Thomas J. Wolf , Chair
Scott County

Cc:

Senator Claire Robling
Senator Julianne Ortman
Senator Dan Hall
Senator Al DeKruif
Representative Michael Beard
Representative Mark Buesgens
Representative Glenn Gruenhagen
Representative Ernie Leidiger
Representative Pam Myhra
Representative Kelby Woodard
Paul Nelson, Scott County

SHAKOPEE

Robert Finley
MPCA
12 Civic Center Drive, Suite 2165
Mankato, MN 56001

Re: Comments on the Draft South Metro Mississippi River Total Suspended Solids TMDL Report

Dear Mr. Finley:

The City of Shakopee is a regulated MS4 under the NPDES program and is directly affected by the findings and requirements proposed in the Draft South Metro Mississippi River Total Suspended Solids TMDL Report. We have reviewed the draft TMDL document and request the MPCA give consideration to incorporate the comments:

1. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock and Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:
   "The long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock and Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock and Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L – see page 53 of the TMDL Report).

   Requested Consideration:
   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:
   - Exclude the entire drainage area for the Mississippi River above Lock and Dam 1 from the TMDL study area

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- Consider the permitted discharges from the regulated MS4 permittees in this drainage area to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
- Eliminate the 25% load reduction for all permitted MS4s, in light of this fact and other reasons.

  At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock and Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above lock and Dam 1 should have a required load reduction.

2. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:
   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Requested Consideration:
   The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries.

These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit.

3. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Requested Consideration:
   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

4. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Requested Consideration:
   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

5. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
   - There is very little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi

river, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Requested Consideration:

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete

explanation in the TMDL Report. If they were not, please revise the TMDL model and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is unsupportable, please revise the modeling and/or allocations appropriately.

6. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. It should not be set based on year of the 96th percentile flow condition.

   Requested Consideration:
   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please remove or disconnect the baseline from a specific year.

7. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

   Requested Consideration:
   Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

   Should statement of action #7 not be accommodated in the TMDL the current cost estimate grossly underestimates the cost of compliance. The current cost estimate is based on traditional BMPS to achieve the 25% TSS reduction. However, if BMP's constructed prior to 2002, that are removing 60-90% of the TSS in urban storm water, are excluded from the MS4's implementation plan; then traditional BMP's will not be successful in achieving the 25% TSS reduction. Advanced BMP's, such as chemical treatment systems and filtration systems may be the only way to achieve this standard for many of the MS4's, and this cost has not been factored into the TMDL. Please revise the cost estimates.

8. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Requested Consideration:
Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

9. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    a. Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    b. State and local funding was directed toward improving water quality in the Minnesota River
    c. The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    In the 20 years since then, no discernible progress has been made, according to the MPCA's most recent biological assessment. Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

    Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:
    - Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
    - State and local funding will be directed toward improving water quality in the Minnesota River
    - The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

    Please note the similarity of these bullet points to the bullet points in the paragraph just above.

    Requested Consideration:
    Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

10. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

    Requested Consideration:
    Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results.

11. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Requested Consideration:
    The TMDL Report should include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

12. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Requested Consideration:
    The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

13. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Requested Consideration:
Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

14. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Requested Consideration:
    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing these challenges.

We request that the MPCA take into consideration the requests for consideration provided in this comment letter.

Sincerely,

Bruce Loney
Public Works Director
City of Shakopee

St. Louis Park
MINNESOTA

Experience LIFE in the Park

May 29, 2012

The City of St. Louis Park submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of St. Louis Park is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

Reasons or Proposed Findings #1

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

   From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

   Statement of Action #2

   This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

   Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

   Reasons or Proposed Findings #2

   The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a

25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5 lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target:** The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   Statement of Action #4

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in

deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are,

therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an

input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions:** There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have

minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

Statement of Action #8

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river.

If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs:** The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area

- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all
- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

Statement of Action #10

Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

Reasons or Proposed Findings #10

MN Statute 114D.25 includes the following text:

"(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

(1) a range of estimates of the cost of implementation of the TMDL; and

(2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

Statement of Action #11

Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

Reasons or Proposed Findings #11

Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities

- State and local funding was directed toward improving water quality in the Minnesota River
- The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

Reasons or Proposed Findings #12

Please see above.

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13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further

reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

Statement of Action #14

The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

Reasons or Proposed Findings #14

Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Statement of Action #16

Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

Reasons or Proposed Findings #16

The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

Statement of Action #17

Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high

and very high flow conditions. Please specifically address the question of whether existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

Statement of Action #18

Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

- How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
- Were the authors of this study consulted in the process of deriving the cost estimate?
- Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
- Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
- Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
- Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?

- Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

The Margin of Safety (MOS) is defined as *"an accounting of uncertainty about the relationship between pollutant loads and receiving water quality."* (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

Statement of Action #19

Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

Statement of Action #20

The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

Reasons or Proposed Findings

Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of St. Louis Park asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

Respectfully,

Scott E. Anderson
Superintendent of Utilities
St. Louis Park, MN 55426

DEPARTMENT OF SAFETY AND INSPECTIONS
Ricardo X. Cervantes, Director

CITY OF SAINT PAUL
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May 29, 2012

Mr. Robert Finley
Minnesota Pollution Control Agency
12 Civic Center Plaza, Suite 2165
Mankato, MN 56001

RE: South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load

Dear Mr. Finley,

The Minnesota Pollution Control Agency (MPCA) is requesting comments on the draft South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL) report.

The City of Saint Paul is interested in this draft TMDL report because the city is a regulated permittee under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit program. The city will be subject to Waste Load Allocations (WLA) assigned by the TMDL report and enforced under the NPDES permit program.

The purpose of this letter is to respectfully request that you consider and address concerns described herein as part of the final decision on the TMDL report. Also, please know that the City of Saint Paul supports written comments provided separately by the League of Minnesota Cities.

1. There is a discrepancy in the total acres of the study area. Please reconcile Figure 9 (22 million contributing acres, 28 million total acres) with Table 3 (26 million total acres).

2. The report analyzes and discusses "developed" land as well as "impervious" land. The terms are not synonymous. The WLA is based on developed land within the National Land Cover Database (NLCD). Please consider standardizing the terms so that regulated permittees better understand the basis of the WLA.

3. It is very difficult to comprehend Table 3 in relation to Figure 18 and information on Page 56. This is a critical flaw in the report. The key component of the WLA (i.e., developed land) is confounded with discussion and figures regarding impervious area estimations. Please either substantially improve labels in the call out boxes in Figure 18 or remove impervious data altogether.

4. The reports states "MPCA also delineated a region called the Metroshed for the seven-county metropolitan area." The characterization of Metroshed on page 28 of the report does not contain reference to the proportionate TSS load contribution relative to proportionate land area. In contrast, TSS load relative to land area for all other contributing basins within the study area are distinctly characterized. This discrepancy is inconsistent and similar discussion should be provided in the report for Metroshed. It is critical that the report consistently and adequately characterize TSS load from all contributing basins identified and discussed within the report. Otherwise, the following statement should be removed from page 12: "This delineation clearly distinguishes metro-area loads from the other major tributary inputs to the model domain..."

We appreciate the opportunity to provide comments as part of the final decision on the TMDL report. If you have any questions, please contact me at 651-266-9112 or wes.saunders-pearce@ci.stpaul.mn.us.

Regards,

Wes Saunders-Pearce
Water Resource Coordinator
City of Saint Paul

cc: Anne Hunt, Mayor Chris Coleman's Office

CITY OF ST. JOSEPH
www.cityofstjoseph.com

Draft South Metro Mississippi River Total Suspended Solids TMDL Report

The City of Joseph submits these Public Comments in response to the Minnesota Pollution Control Agency's (MPCA) Public Notice for the Draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report (TMDL Report).

Statement of Interest

The City of Joseph is in the drainage area for this TMDL and, thus, is directly affected by its findings.

Comments

1. **Fatal flaws:** This TMDL, through the linkage to the MS4 permits, creates immense new legal obligations and liabilities for regulated MS4 cities. The simplest example of this is the $850 million cost estimate to achieve the MS4 WLA. These obligations and liabilities are not controllable by the MPCA. The MPCA has limited enforcement discretion under the Clean Water Act and State statutes and rules. Independent third parties are encouraged and empowered to act as private attorneys general to sue either the MPCA or the permitted parties to ensure compliance. There is a history of such suits under the TMDL and stormwater permitting programs in Minnesota and the United States.

   The power to create such significant new legal obligations and liabilities should be exercised with restraint, responsibility, and based on rigorous science, research, modeling, and analysis. These standards have not been met by this TMDL study and report.

   Statement of Action #1

   This TMDL should be withdrawn and redone. The flaws listed below, along with others, should be addressed and corrected.

   Reasons or Proposed Findings #1

25 College Avenue North • PO Box 668 • Saint Joseph, Minnesota 56374
Phone 320.363.7201 Fax 320.363.0342

A list of some of the flaws of this TMDL is provided in the comments below. They include:

- Inadequate consideration of the fact that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L.
- The boundaries for the areas served by the MS4 conveyance system are significantly inaccurate throughout the TMDL
- Insufficient consideration of factors related to the distribution of particle sizes in various sources of stormwater runoff
- Improperly not using the results of the Minnesota River Turbidity TMDL as an input boundary condition for this TMDL
- Improperly setting the MS4 WLAs according to flow conditions in the river
- Improperly setting the MS4 baseline year at 2002
- Not meeting the statutory requirement to provide cost estimates for the implementation of the TMDL (for all sources and sectors)
- Providing no model calibration or sensitivity analysis for urban discharges
- Improperly setting a 25% MS4 load reduction that is arbitrary and ineffective
- Not providing sufficient information or MPCA commitment to trading, including for MS4 permitted cities
- Not accounting for the water quality benefits of high-density development in the process of setting the MS4 WLAs
- Not providing for the deferral of the MS4 WLA load reductions until actual reductions from the large unregulated sources can be demonstrated and confirmed
- Insufficient consideration of the fact that most stormwater and stabilization BMPs (urban and non-urban) are effective under low and moderate flow conditions but are not effective under high and very high flow conditions
- Providing insufficient information about the cost estimate to achieve the MS4 WLA
- Improperly requiring an MS4 load reduction that is much smaller than the MOS for the TMDL, and thus within the margin of uncertainty for the study, modeling, and the TMDL.

Many of these items are significant flaws individually. Taken together, they make the TMDL fatally flawed. With these flaws taken into consideration, the MPCA cannot say that the significant new legal obligations and liabilities created by this TMDL are the product of rigorous science, research, modeling, and analysis.

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2. **Insufficient attention to urban discharges**: The development of this TMDL posed significant challenges for the MPCA. One of the fundamental conclusions of the

TMDL is that the large majority of the load comes from non-urban sources. Based on conversations with MPCA staff and discussions at the public information meetings for this TMDL, it appears that the MPCA decided to focus the large majority of its resources to addressing issues and questions related to the loading from non-urban sources.

From one perspective, this seems like a sound decision. Unfortunately, this TMDL creates immense new legal obligations and liabilities for regulated MS4 cities. The decision to focus on the non-urban sources meant that scant attention and resources were given to the issues and questions related to the discharges from urban sources. The results of this fact can be seen throughout the comments listed below.

Statement of Action #2

This TMDL should be withdrawn and redone. Sufficient attention and resources should be given to the issues and questions related to urban discharges. A proper and sufficient stakeholder process should be conducted with all the MS4 cities in the drainage area. The problems enumerated in the comments below should be rectified and resolved.

Additionally, the MPCA TMDL program should work directly with the permitted MS4 cities to correct the problems in this TMDL and ensure that such flaws are not perpetuated in other TMDLS.

Reasons or Proposed Findings #2

The MPCA should not create new legal obligations or liabilities of this magnitude for the permitted MS4 cites without allocating sufficient and appropriate staff and funding resources to prepare this TMDL or any other TMDL with urban discharges in the drainage area.

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3. **Flexible expression of the MS4 WLA**: The MPCA is to be commended for the manner in which the MS4 WLA is expressed in this TMDL. It is presented as numbers in metric tons per year for average flow conditions, and in metric tons per year and kilograms per day for the five flow conditions. The MS4 WLA is also expressed as a 25% reduction. Finally, it is also expressed as target loads for built-up areas (169 lbs/acre/year), newly developed areas, and open-space developed areas (112.5

lbs/acre/year). These multiple expressions of the MS4 WLA allow for appropriate flexibility for MS4s in designing and implementing urban stormwater management programs to meet the MS4 WLA for this TMDL.

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4. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "the long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock & Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock & Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L (see page 53 of the TMDL Report)).

   <u>Statement of Action #4</u>

   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock & Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees above Lock & Dam 1 to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL".*
   - Eliminate the 25% load reduction for all permitted MS4s above Lock & Dam 1, in light of this fact and other reasons. This approach could be similar to the approach taken for the MS4 dischargers in the Upper Vermillion River in deciding not to impose load reductions on them as part of the Lower Vermillion River Turbidity (TSS) TMDL. This language is from page 7 of that

report: *"No load reductions are necessary for the Upper Vermillion River, although the planned movement of the Empire wastewater treatment plant effluent to the Mississippi River is expected to have a beneficial impact on water quality within the LVR. Despite the fact that no load reductions are required for these sources, a load allocation for the Upper Vermillion River and wasteload allocations for its NDPES permitted municipalities (MS4s) were computed to meet the requirements of a comprehensive TMDL."*

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock & Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above Lock & Dam 1 should have a required load reduction.

Reasons or Proposed Findings #4

The facts supporting this comment are included in the TMDL Report. We recommend a detailed review and discussion with stakeholders of the research, studies, and reports that were executed or prepared in the course of developing this TMDL and the Lake Pepin model. Details from these materials would serve as the basis for a contested case hearing on this comment. Precedent is available in other TMDLs.

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5. **Incorrect boundaries for MS4 cities**: The boundaries and land areas for the permitted MS4 cities used in this TMDL study are incorrect and significantly flawed. The TMDL Report is based on the 2002 National Land Cover Data (NLCD). Please see this excerpt from page 56 of the TMDL Report:

   "To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. The four classes are based on ranges of impervious cover, as indicated below.

   Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries. The following acreages were determined for the South Metro Mississippi watershed:
   - *Developed, low intensity (20 to 49 percent impervious) – 248,750 acres;*
   - *Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres;*
   - *Developed, high density (more than 79 percent impervious) – 65,750 acres; and*
   - *Developed, open space (less than 20 percent impervious) – 154,600 acres."*

   Statement of Action #5

The TMDL should be revised using the accurate boundaries for the permitted areas within MS4 cities. The modeling should be revised using these boundaries. These boundaries can be provided by the cities. The boundaries for the MS4 WLA should be set to include only the land areas covered by the MS4 permit. The modeling should be redone based on these corrected MS4 boundaries.

Reasons or Proposed Findings #5

The boundaries for the permitted cities are flawed in at least three significant ways:

- The outside boundaries of the areas covered under the MS4 permit are not accurate. These outside boundaries are determined by the land areas served by the cities' MS4 conveyance systems. The cities have these areas mapped, but the MPCA never requested this information in the course of preparing the TMDL. The NLCD does not include any information about the extent of the land areas served by any of the MS4 cities' conveyance systems. The actual boundaries of the land areas served by the conveyance system and, therefore, covered under the MS4 permit were not used in the course of developing the TMDL or any of the underlying models. Only the permitted areas of the MS4 cities should be included in the WLA.
- Some of the cities in the drainage area for this TMDL have significant land areas within their boundaries that have never discharged urban stormwater outside the city boundaries or to the Mississippi River or its tributaries. In some cases, these landlocked areas constitute one-third or one-half of the land area served by the cities' MS4 conveyance systems. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.
- There are portions of every permitted MS4 city that drain overland (sheet flow) directly to receiving waters without passing through the cities' MS4 conveyance systems. Depending on the density and types of receiving waters in each city, this land area can be as much as 30% of the land area within the outside boundary of a city's MS4 conveyance system. The loading from this type of land, immediately adjacent to receiving waters, corresponds to near-channel loading that was found to be a very significant type of contribution to the loading for the Minnesota River. The land areas used to develop the TMDL and the underlying models did not include this information and are, therefore, significantly inaccurate. The MPCA never requested this information from any of the permitted cities in the drainage area.

Taken together, these flaws mean that the land areas for the permitted MS4 cities used to develop the TMDL and the underlying models were significantly inaccurate. This means that the WLA for the permitted cities is inaccurate. Establishing the correct boundaries is one of the most fundamental starting points for any water quality modeling project. The fact that the MS4 cities' boundaries are significantly inaccurate in this TMDL study is unacceptable and inexcusable.

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6. **Variations in particle size distributions**: Information about variation in the distribution of particle sizes in runoff from various sources is missing from this TMDL. Information about the relationship between the particle size distribution of runoff and the resulting turbidity in the receiving waters is also missing. Without addressing these factors, the MS4 WLA cannot be accurate.

   Statement of Action #6

   Please revise the TMDL study to include information about the distribution of particle sizes in runoff from various sources. Revise the TMDL to address issues related to the relationship between particle sizes and turbidity. Address the differences in the particle size distributions between urban stormwater discharges and discharges from non-urban sources. Address these differences and relationships in the modeling for the TMDL. Revise the load allocations with particle size distributions included as factors.

   Reasons or Proposed Findings #6

   It is widely recognized that the sizes of particles is a significant factor in the relationship between TSS loading and turbidity in receiving waters. Smaller particles more greatly influence higher turbidity. It is also widely recognized that there are significant differences between the particle size distributions for urban runoff compared to non-urban runoff. Without addressing these factors, the MS4 WLA cannot be accurate. Saint Anthony Falls Laboratory, of the University of Minnesota, is a source of excellent information and research on these subjects.

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7. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in

the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

Statement of Action #7

Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

Reasons or Proposed Findings #7

The study area for the Minnesota River Turbidity TMDL matches the Minnesota River Basin included in this TMDL. The results of the MN River TMDL should be used as input for this TMDL. This is customary practice for "nested" TMDLs. It was clearly the intent described on page 45 of the TMDL Report, but the wrong scenario was used. Scenario 5 from the MN River TMDL should be used because it is the basis for the allocations in the MN River TMDL. Without this revision, all the allocations in this TMDL are incorrect. The load reduction in the MN River TMDL is 90%. The load reduction for the MN River Basin in this TMDL Report is 50% to 60%. There is a significant difference between these two load reductions.

The same reasons or proposed findings apply to Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

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8. **Setting MS4 WLAs in relationship to flow conditions**: There are multiple questions regarding the appropriateness of determining and setting the MS4 WLAs according to five flow conditions. These include, but are not limited to :
    - There is relatively little correlation between the TSS loading in urban discharges and the flow condition in the river. In a river system the size of the Mississippi River, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading

from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in the urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land.

- TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. Cities have addressed flood control in their jurisdictions for many years. They commonly have significant flood control structures and BMPs in place within their jurisdictions. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.
- In a river system the size of the Mississippi River, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4 city. In that circumstance, the city could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, a city can have an intense localize rain event that causes heavy loading in its discharge but does not change a low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

<u>Statement of Action #8</u>

If these factors and other related factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report. If they were not, please revise the TMDL methodology, model, and allocations to address these factors. Please evaluate and reconsider whether the MS4 WLAs should be expressed in relationship with the flow conditions in the river. If it is determined that this approach is poorly supported, please revise the methodology, modeling, and/or allocations appropriately.

Reasons or Proposed Findings #8

There are significant and multiple differences between TSS loadings in urban and non-urban settings. There are very different relationships between rainfall, snowmelt, and TSS loadings in urban and non-urban settings. If these differences were addressed in deciding to link the MS4 WLAs to the flow conditions in the river, a complete and comprehensive explanation is needed in the TMDL Report. If these differences were not addressed and the linkage between the MS4 WLAs and the river flow conditions is not appropriate, the MS4 WLA are expressed inappropriately and the TMDL is setting the MS4 cities up for failure and violations.

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9. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. The baseline condition should not be set based on the year of the 86th percentile flow condition.

Statement of Action #9

Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please disconnect the baseline from a specific year.

Reasons or Proposed Findings #9

The HSPF model, as described in the TMDL Report, did not include BMPs for the land use inputs. As listed on page 56 of the TMDL Report, the model used NCLD developed land uses. It appears that there were only four types of land uses included. They were differentiated only by the percentage of impervious area. They were:

"Developed, low intensity (20 to 49 percent impervious) – 248,750 acres; Developed, medium intensity (50 to 79 percent impervious) – 140,000 acres; Developed, high density (more than 79 percent impervious) – 65,750 acres; and Developed, open space (less than 20 percent impervious) – 154,600 acres."

In the following scenario, it appears that the following two land areas would be identical model inputs:

- Two residential developments
- Same total land area
- Same percentage of impervious area
- One built in 1960 with no stormwater BMPs at all

- The other development built in 2001, with a stormwater pond and multiple rain gardens and infiltration BMPs included.

If this is correct, this means that the baseline condition used for the model was urban land use with no BMPs in place. This, then, should be the baseline condition for the MS4 WLAs.

Furthermore, the MS4 WLA (expressed as either the 25% load reduction from the baseline or the target loading rates) is stated as being for the average flow condition (page 57). In light of this fact, setting the baseline for the MS4 WLA at 2002, because it corresponds to the 86th percentile flows condition, is inappropriate.

The baseline year set for the MS4 loadings is of immense importance for the regulated MS4s. Cities in Minnesota have been making sure that stormwater controls and BMPs have been implemented in significant numbers since the 1980s. As TMDLs and the MS4 permit are currently interpreted, setting the MS4 baseline year at 2002 would mean that a very large number of BMPs could not be counted toward meeting the TMDL. This would be of enormous financial consequence for the regulated MS4s.

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10. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

    Statement of Action #10

    Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

    Reasons or Proposed Findings #10

    MN Statute 114D.25 includes the following text:

    "(b) A TMDL must include a statement of the facts and scientific data supporting the TMDL and a list of potential implementation options, including:

    (1) a range of estimates of the cost of implementation of the TMDL; and

    (2) for point sources, the individual wasteload data and the estimated cost of compliance addressed by the TMDL."

By including a cost estimate only for achieving the MS4 WLA and only addressing item b.2. in the statute listed above, this TMDL Report does not fulfill this statutory requirement. This TMDL Report should be revised to include the cost to achieve all the allocations, including the LA.

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11. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

    Statement of Action #11

    Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

    Reasons or Proposed Findings #11

    Calibration and sensitivity analysis are essential elements of water quality modeling. Without calibration and sensitivity analysis for the various types of loading included in this TMDL, the reliability and accuracy of the modeling results for each type of loading cannot be evaluated sufficiently. The results of a large-scale and coarse model that cannot support calibration and sensitivity analysis for the permitted MS4 loading are not sufficient to support the MS4 WLAs in this TMDL that result in an $850 million set of legal obligations and liabilities for the permitted MS4 cities.

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12. **Past results for the Minnesota River**: In 1992, Governor Arne Carlson issued a famous challenge: to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the MN River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River
    - The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, little discernible progress has been made, according to the MPCA's most recent biological assessment. A recent MPCA report titled "Revisiting the Minnesota River Assessment Project: An Evaluation of Fish and Invertebrate Community Progress (MPCA, May 2011, page 23) included the following text:

> *"In order to address the deteriorating conditions within the Basin, several advisory committees were formed, conservation programs were developed, and best management practices (BMPs) were implemented. To date, these efforts have led to only modest improvements to no change to the overall biological condition of rivers and streams within the Minnesota River Basin."*

Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied times the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the loading in the Mississippi River will come from the LA in the Minnesota River. The State's approach to achieving load reductions for this LA can be accurately described as follows:

- Improving water quality in the MN River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

Please note the similarity of these bullet points to the bullet points in the paragraph just above.

<u>Statement of Action #12</u>

Please include, in the TMDL Report, an explanation of how the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the LA for the MN River. Please be specific and detailed.

<u>Reasons or Proposed Findings #12</u>

Please see above.

13. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

Statement of Action #13

Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results. Please conduct a contested case hearing to make this determination.

Reasons or Proposed Findings #13

The 25% load reduction was the subject of some discussion with MS4 stakeholders during the development of this TMDL. At that time, many elements of the TMDL Report were either not known or not conveyed to the municipal participants. These elements included:

- The immense estimated cost to achieve the WLA
- The load reductions for the MN River TMDL
- The fact that the TSS loading in the Mississippi River above Lock & Dam 1 met or exceeded the TMDL target loading of 30 mg/L.

These stakeholder conversations also included only a very small percentage of the cities included in the drainage area. The implications of the decision to impose a 25% load reduction on all the MS4s was poorly understood by the participants in the stakeholder process. In light of these facts, the stakeholder process used, in large part, to arrive at the 25% load reduction was fatally flawed.

Finally, page 82 of the TMDL Report includes the following text, in the context of considering contingency measures if load reduction milestones are not met in the future:

> *"Contingency requirements for this TMDL will not include ratcheting down further on point sources by reducing their waste load allocations, be they permitted MS4s or permitted wastewater treatment facilities. As this document attests, these are very minor sources of sediment to the South Metro Mississippi River, and further reducing their waste load allocations will not help to accomplish the goals of the TMDL in any measurable way."*

The TMDL Report states that the permitted MS4s are only *"very minor sources of sediment".* Additionally, the Report states that reducing the load from the permitted MS4s *"will not help to accomplish the goals of the TMDL in any measurable way."*

The stakeholder process was flawed. The science and the modeling in the TMDL do not support the load reduction. The load from the permitted MS4s is insignificant. Load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. The 25% load reduction for all permitted MS4s should not stand.

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14. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

    Statement of Action #14

    The TMDL Report should be revised to include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

    Reasons or Proposed Findings #14

    Trading could result in a much more cost-effective set of responses to meet the TMDL goals. A specific commitment form the MPCA to develop a trading program that includes permitted MS4 cities is necessary and appropriate in the context of this TMDL.

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15. **Density**: In 2006, USEPA published a guidance document titled "Protecting Water Resources with Higher-Density Development". The conclusions from this guidance document should be incorporated into this TMDL, especially for the MS4 WLAs for permitted MS4 cities with higher-density development.

    Statement of Action #15

The MS4 WLAs (load reductions and target loading rates) should be revised for MS4 cities with higher-density development. Higher-density development should not be viewed as a stormwater management BMP. Instead, the WLA numbers should be revised to reflect the value of higher-density development in protecting water quality.

Reasons or Proposed Findings #15

The USEPA guidance document includes the following text:

> *"EPA examined stormwater runoff from different development densities to determine the comparative difference between scenarios. This analysis demonstrated:*
>
> - *The higher-density scenarios generate less stormwater runoff per house at all scales—one acre, lot, and watershed—and time series build-out examples;*
> - *For the same amount of development, higher-density development produces less runoff and less impervious cover than low-density development; and*
> - *For a given amount of growth, lower-density development impacts more of the watershed.*
>
> *Taken together, these findings indicate that low-density development may not always be the preferred strategy for protecting water resources. Higher densities may better protect water quality—especially at the lot and watershed levels. To accommodate the same number of houses, denser developments consume less land than lower density developments. Consuming less land means creating less impervious cover in the watershed. EPA believes that increasing development densities is one strategy communities can use to minimize regional water quality impacts."*

The WLAs for permitted MS4 cities with higher-density development should be revised to reflect the value of higher densities in protecting water quality, as described by USEPA. In considering density, the MPCA should include density factors beyond population. High-density development can also include office, commercial, industrial, and other types of land uses.

16. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

    Statement of Action #16

    Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

    Reasons or Proposed Findings #16

    The estimated cost to achieve the TMDL goals for the permitted MS4s is immense: $850 million. The TMDL Report states that the load from the permitted MS4s is insignificant and that the load reduction from the permitted MS4s will be ineffectual toward meeting the TMDL goals. It would be a waste of public funds to compel the permitted MS4s to expend these monies if it proves to be impossible to achieve the much larger load reductions needed from the unregulated sources. It is appropriate to defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources.

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17. **Address the challenges of controlling loading during high flow conditions**: The TMDL has a special focus on the need to control TSS loading during high and very high flow conditions. Controlling TSS loading during such conditions poses unique challenges.

    Statement of Action #17

    Revise the TMDL to address the unique challenges of controlling TSS loadings during high and very high flow conditions. Discuss the fact that most stormwater BMPs are effective only during small and medium-sized storm events and are overwhelmed during large storm events. Discuss the fact that many stabilization BMPS are effective under low and moderate flow conditions and are not effective during high and very high flow conditions. Please specifically address the question of whether

existing BMP technologies are capable of addressing the challenges specifically related to high and very high flow conditions.

Reasons or Proposed Findings #17

The proposed revisions to the TMDL should be made because many of the known control BMPs have only limited effectiveness during high and very high flow conditions.

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18. **Additional information for the MS4 WLA cost estimate**: The estimated cost to meet the MS4 WLA is immense, $850 million. For a cost of such magnitude, there is a remarkable lack of information regarding the method used to derive this estimated cost.

    Statement of Action #18

    Please provide additional information about the method used to derive the estimated cost to achieve the MS4 WLA. Specifically, please address the following questions:

    - How was the estimated cost to reduce TSS loading from urban land derived from the study by Weiss et al (2007)?
    - Were the authors of this study consulted in the process of deriving the cost estimate?
    - Were there other sources, studies, research, or papers used to derive or confirm the cost estimate?
    - Does the cost estimate reflect the high cost of reducing TSS loads in urban areas that are already built-out? Does the cost estimate reflect the fact that stormwater BMPs are much more expensive to implement as retrofits compared to implementing them during new development or redevelopment? Did the methodology for deriving the cost estimate include an estimate of the portion of the MS4 cities where BMPs would have to be implemented as retrofits?
    - Does the cost estimate include the cost of land for stormwater BMPs? Does it reflect an estimate of the higher cost of land for BMPs in retrofit situations?
    - Does the cost estimate include the full life cycle costs of the proposed BMPs (maintenance, operations, mapping, documentation, reporting, inspections, decommissioning, etc.)?
    - Was the methodology used to derive the cost estimate, in the view of the MPCA, sufficiently rigorous considering the magnitude of the cost,

obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL?

After considering, at a minimum, the questions listed above, the MPCA should consider revising the method used to derive the cost estimate to achieve the MS4 WLA. The revised number, along with a full explanation of the methodology used to derive it, should be included in a revision of the TMDL.

Reasons or Proposed Findings #18

Based in information provided during the public informational meetings, the methodology used to derive the estimated cost to achieve the MS4 WLA was not sufficiently rigorous considering the magnitude of the cost, obligations, and legal liabilities that will be imposed on the regulated MS4 s because of this TMDL.

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19. **Margin of Safety vs. MS4 WLA**: The total load reduction for the permitted MS4s in this TMDL is approximately 1.5% of the total load to Lake Pepin. The estimated cost to achieve this load reduction is $850 million. The TMDL, through linkage to the MS4 permits, creates an immense new set of legal obligations and liabilities for all the permitted MS4s.

    The Margin of Safety (MOS) is defined as "*an accounting of uncertainty about the relationship between pollutant loads and receiving water quality*." (page 2) The TMDL also states that the MOS is included *"to account for any lack of knowledge concerning the relationship between load and waste load allocations and water quality."* (page 60) The MOS for this TMDL includes two portions: implicit and explicit. The implicit portion of the MOS is described but not quantified in the TMDL Report. In addition to the implicit margin of safety, an explicit margin of safety of 6% is included in the TMDL.

    Thus, the total load reduction required of the permitted MS4s is significantly less than one quarter of the uncertainty and lack of knowledge about the relationship between the loads and the load reductions and the receiving water quality.

    Statement of Action #19

    Please provide a detailed explanation of the MPCA's rationale for creating such a large new set of legal obligations and liabilities for the permitted MS4s when the entire proposed MS4 load reduction is only a small portion of the uncertainty in the

underlying study and modeling. Please reconsider whether this is appropriate or justified. Please do not limit this explanation to "the Clean Water Act requires it". Please consider redoing the study, with more attention to urban loadings, in order to strengthen the support for the MS4 WLA.

Reasons or Proposed Findings #19

Typically, the strength of the research or analysis in a study that supports the creation of new legal obligations and/or liabilities is commensurate with the magnitude of those obligations or liabilities. This is not the case, in this example. Based on the stated relationship between the MS4 load reduction and the uncertainty in the study, either the load reduction needs to be revised or the study needs to be improved.

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20. **Second largest TMDL in the United States**: This TMDL, when approved, will be the second largest TMDL, in terms of drainage area, in the United States. Only the Chesapeake Bay TMDL is larger. The drainage area for this TMDL is approximately 45,000 square miles, compared to approximately 65,000 square miles for the Chesapeake Bay TMDL.

    Statement of Action #20

    The MPCA should ascertain the total amount of federal funding that has gone to support the development of and implementation for the Chesapeake Bay TMDL. The MPCA should then work with the federal elected officials for Minnesota and the USEPA to secure a commensurate and proportional amount of federal funding support for the development of and implementation for this TMDL.

    Reasons or Proposed Findings

    Commensurate and proportional federal funding support for this TMDL is fair and appropriate.

Conclusion

The City of Joseph asks that the MPCA take the requested actions set forth in this submittal. The City further requests that MPCA consider the comments raised in this submittal and revise or redo the TMDL Report.

CITY OF Woodbury

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Robert Finley
Minnesota Pollution Control Agency
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Mankato, MN 56001
Email: Robert.finley@state.mn.us

Dear Mr. Finley,
Please accept this letter as formal comments on the draft South Metro Mississippi River Total Suspended Solids Total Maximum Daily Load Report from the City of Woodbury, a regulated MS4 within the subwatershed of this TMDL.

Statement of Interest in the draft South Metro Mississippi River Total Suspended Solids (TSS) Total Maximum Daily Load (TMDL) Report

The draft TMDL report will apply to the City of Woodbury as a regulated MS4. The City will be required to reduce TSS loads by 25% as part of the implementation of the TMDL. Therefore, the City is interested in both the draft document as well as the implications of implementation of the report.

General Comments

1. One of the major concerns for MS4s is whether other sectors are being held responsible for meeting their fair share of the TMDL water quality goals. Providing accountability for farm operations seems critical to success of this TMDL. While cities and regulated industries are required to meet TMDL goals, field agriculture operations are given voluntary reductions with no effective accountability mechanism in place and no contingency plan should these voluntary actions fail to achieve pollution goals.

2. In 1992, Governor Arne Carlson issued a famous challenge - to make the Minnesota River fishable and swimmable in 10 years. The challenge resulted in:
    - Improving water quality in the Minnesota River became a high priority for a wide range of state agencies and local/regional entities
    - State and local funding was directed toward improving water quality in the Minnesota River

- The effort was focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

In the 20 years since then, no discernible progress has been made, according to the MPCA's most recent biological assessment. Other data indicates that TSS concentrations have diminished in the river but that flow rates have increased. When the lower concentrations are multiplied by the higher flows, the total loading in the river is roughly the same compared to 20 years ago.

Under the TMDL, the vast majority of the reduction in loading in the Mississippi River will come from the load allocation (LA) in the Minnesota River. The approach to achieving load reductions for this LA could be described as follows:

- Improving water quality in the Minnesota River will be a high priority for a wide range of state agencies and local/regional entities
- State and local funding will be directed toward improving water quality in the Minnesota River
- The effort will be focused on a range of voluntary practices and incentives to achieve changes in the drainage area for the river.

It seems unlikely that the exact same approach that has yielded little or no improvement in the Minnesota River in the last 20 years can be expected to result in a 90% load reduction for the Minnesota River as a result of this TMDL.

3. There are many locations in this draft TMDL report that recognize the fact that almost all the loading comes from non-urban sources. This is a good reason to focus almost all the attention and resources on modeling, research and implementation related to these non-urban sources. As stated in the draft TMDL: "Implementation strategies will focus on nonpoint-source pollution because it contributes nearly all sediment to the South Metro Mississippi." On the other hand, this TMDL creates immense legal and financial obligations for the MS4s that contribute just a small portion of the total loading. In light of these significant obligations, it would appear that using agency and state resources to develop research, guidance, and compliance tools for the MS4 (urban) sources is also appropriate and necessary.

4. As the quantified program component of the water quality and stormwater regulatory framework, TMDLs must meet high standards. The waste load allocation set forth in this TMDL must be quantifiable, well-founded and understandable. These criteria have not been met in the TMDL as described in the specific comments below.

Specific Comments

1. **TMDL Section:** 3.1 Tributary basins and watersheds (pages 18 and 19)
   Statement of Action: Revise Figure 10 and Table 2 in regards to the Battle Creek subwatershed TSS concentrations.
   Supporting Reason: The Battle Creek subwatershed, despite being colored on Figure 10, does not show up in Table 2. Additionally, the color of the Battle Creek subwatershed does not seem to match either the low or medium potential colors in the key, but appears to be a combination of the two colors.

2. **TMDL Section:** 3.1 Tributary basins and watersheds (page 28)
   The long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock and Dam 1, in the heart of the Twin Cities metropolitan area. The TSS concentration in the South Metro Mississippi increases to 64 mg/L at River Mile 839, five miles downstream of the Minnesota River, and then progressively declines to 60 mg/L (River Mile 831), and 52 mg/L (River Mile 827) as it flows through St. Paul and the southern suburbs.
   Statement of Action: Provide rational, in light of the supporting reasons below, for the MPCA decision that metro MS4s should be responsible for any necessary load reduction identified in the TMDL.
   Supporting Reason: The data shows that the TSS concentrations in the Mississippi River improve as the river moves through the Twin Cities. The TSS concentration at Anoka is 24 mg/L and 20 mg/L at Lock & Dam 1. Both concentrations are below the site-specific water quality standard. In addition, a 2006 study by the Metropolitan Council that was cited in the Lake Pepin Modeling Report indicates a 34% decrease in TSS load between the metro inputs at Jordan, Stillwater, and Anoka compared to the output at Red Wing. Based on this information, it appears that the tributary area to the Mississippi River in the metro and upstream should be considered to be not causing or contributing to the impairment of the South Metro Mississippi River. The TMDL document summarizes the issue with the statement found on page 4: "Impacts of minor tributaries and stormwater outfalls are not sufficient to exert an enduring, definable influence on TSS concentrations through these urbanized reaches of the South Metro Mississippi."

3. **TMDL Section:** 3.1 Tributary basins and watersheds, Figure 15 (page 29)
   Statement of Action: Provide stakeholders and commenters the appropriate GIS information to recreate this figure.
   Supporting Reason: It is unclear from Figure 15 what the delineation of the Metroshed truly is. For a city like Woodbury, which is between 2 major subwatersheds, it is difficult to determine what part of the city was deemed in the Metroshed.

4. **TMDL Section:** 5.0 Modeling Approach and Results (pages 41-46)

   Statement of Action: The loading assumptions of the South Metro Mississippi TMDL should be recalculated.

   Supporting Reason: The model used for the TMDL was calibrated for urban flows. The model calibration was done for the entire system and urban flows are a small portion of the total flows for both systems. The modeling of urban flows and discharges may be significantly flawed and there was no calibration done that would have exposed modeling problems. It is also not clear how the Metroshed was incorporated into the model and the reduction scenarios. Was the Metroshed assigned to the appropriate basins (Upper Mississippi and Minnesota) in the model?

5. **TMDL Section:** 5.1.2 Relationships to other TMDLs within the South Metro Mississippi Watershed (page 47)

   The Lower Cannon River Turbidity TMDL . . . is more restrictive than the 50-percent TSS load reduction requirement of the South Metro Mississippi River. . . The Lower Vermillion Turbidity TMDL . . . more restrictive than the 20-percent reduction required in the South Metro Mississippi TMDL. . . the total load of sediment delivered to the larger rivers of the Minnesota River basin would need to decrease up to 90 percent for certain watersheds under high flow conditions. This load-reduction requirement is more restrictive than the South Metro Mississippi TSS TMDL, which calls for 50-percent TSS load reductions from the Minnesota River at average and lower flows, and 60-percent load reductions at high and very high flows, as measured at Ft. Snelling in St. Paul.

   Statement of Action: The loading assumptions of the South Metro Mississippi TMDL should be recalculated.

   Supporting Reason: Each of the TMDLs listed above is nested within the South Metro Mississippi TSS TMDL. The allocation from these TMDLs should be treated as an input to the South Metro Mississippi TSS TMDL. It appears that the load from these rivers is significantly overstated in this document. If the load from the rivers was used as an input condition in the TMDL, there would be much more load available for the other basins in the drainage area.

6. **TMDL Section:** 6.0 TMDL Development and Determination of Allocations (page 48)

   In summary, the TMDL calls for the following set of TSS load reductions:

   60 percent from the Minnesota River Basin at high and very high flows; 50 percent at median and lower flows; 50 percent from the Cannon River Basin; 20 percent from the Upper Mississippi River Basin; 0 percent from the St. Croix River Basin; 0 percent from all tributaries from December to February; 25 percent from regulated MS4s; 50 percent from internal sources such as wind-induced resuspension; and 20 percent from local tributary loads in Minnesota and Wisconsin, including the Vermillion River, Hay Creek and Wells Creek in Minnesota, and the Trimbelle River, Isabelle Creek, and Rush River in Wisconsin.

   Statement of Action: Explain the basis for selecting the 25% reduction for MS4s.

Supporting Reason: Each of the other load reductions from subwatershed areas listed was based on Scenario 17 of the load reduction scenarios as described in Section 5.1.1. There is no description of the process for how a 25% reduction was determined appropriate for MS4s. MS4 loads and required reductions do not seem to be in any way linked to the modeling process for the watershed as described in Section 5.

7. **TMDL Section:** 6.0 TMDL Development and Determination of Allocations (page 49)
MS4s: Regardless of their location in the South Metro Mississippi watershed, MS4 reductions are 25 percent in TSS loads from a baseline of 2002 loads.
Statement of Action: Delete the language "regardless of their location in the South Metro Mississippi Watershed"
Supporting Reason: It is unreasonable to apply this reduction requirement to an MS4 that lies within a watershed where no reduction is required from any other point or nonpoint-source entity. MS4s in the St. Croix Basin are an example.

8. **TMDL Section:** 6.0 TMDL Development and Determination of Allocations (page 49)
MS4s: Regardless of their location in the South Metro Mississippi watershed, MS4 reductions are 25 percent in TSS loads from a baseline of 2002 loads.
Statement of Action: Revise the baseline year for MS4s.
Supporting Reason: The baseline year was improperly determined. The WLA for MS4s (25% load reduction) was set and expressed for all flow conditions and was calculated using a **median** export value according to the process in Section 6.3. The baseline year for urban discharges was set at 2002, corresponding to the 86th percentile high flow condition. This is an inappropriate year selection. A more appropriate baseline year could be the year of the impairment listing (1998) or the year closest to 1998 where there was an average flow condition.

9. **TMDL Section**: 6.0 TMDL Development and Determination of Allocations (pages 50 and 51)
Table 7 on the next page shows the TSS load allocations for the same source categories and areas as in Table 6 above, but adds five categories of river flow. Allocations by flow regime, from very high to very low, are based on historical monitoring data at Lock and Dam 2 on the Mississippi River. The MPCA developed allocations by using the Upper Mississippi River-Lake Pepin model, with modifications to Scenario 17 as discussed previously (pp. 45-46).
In the model, the MPCA chose the five flow categories to distinguish between critical, average and non-critical conditions for meeting the TMDL. The two highest flow categories (very high and high) represent the most critical conditions for meeting the TMDL.
Statement of Action: Reevaluate whether MS4 WLAs should be expressed in relationship with flow conditions in the river based on the supporting reasons below. If these factors were considered in the course of developing the TMDL model and allocations, please provide a complete explanation in the TMDL Report.

If they were not, please revise the TMDL model and allocations to address these factors.

Supporting Reasons: There is very little correlation between the TSS loading in urban discharges and the flow condition in the river.

In a river system the size of the Mississippi, the flow conditions are frequently determined by large-scale rain events over large land areas and long durations of time. TSS loading accumulates on urban impervious surfaces at a fairly constant rate over time. This load is then washed off and discharged to the receiving water during intense rain events. These rain events can be short, localized events that have minimal effect on the flow in the river but result in significant TSS loading from the urban land. In the event of a heavy, long-duration rain event, the loading in the urban discharge is typically much greater early in the event than later in the event. The amount of time between intense rain events is more important than the size or duration of each event. The large portion of impervious surfaces serves to armor the surface from the impact of raindrops, thus making the loading in urban discharges much different from the loading in non-urban settings with low percentages of impervious surfaces. The timing and amount of TSS loading from urban land behaves in very different ways than TSS loading from non-urban land. Additionally, TSS loading from urban land during snowmelt and floods is very different from the loading from non-urban land. MS4s have addressed flood control in their jurisdictions for many years. Commonly, significant flood control structures and BMPs are in place. Many of these structures impound water, thus changing the flow regime and settling out significant amounts of solids. The armoring of urban surfaces also results in loading during the large rain events that may cause floods to be much different from the loading for non-urban land. The saturation of the soils is much less a factor in urban settings. Floods and snowmelt are conditions that result in a significant portion of the total TSS loading to the river system.

Third, in a river system the size of the Mississippi, the flow condition in the river will frequently be determined by a rain or snowmelt event that has occurred far upstream of a given MS4. In that circumstance, the MS4 could have little loading in its discharge during a flow condition when a larger loading would be allowed under the MS4 WLA. Conversely, an MS4 can have an intense localize rain event that causes heavy loading in its discharge but does not change the low flow condition in the river. This could be viewed as a violation of the MS4 WLA that is set according to low flow conditions.

There is no indication that these factors were considered in the process of setting the MS4 WLAs according to the flow conditions in the river.

10. **TMDL Section:** 6.3 Municipal Separate Storm Sewer Systems (MS4s) (page 56)

To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use . . . Using a Geographic Information System (GIS), NLCD developed land uses were clipped using the regulated MS4 boundaries.

Statement of Action: Please provide more information on how the 2002 National Land Cover Data (NLCD) was used to determine "regulated MS4 boundaries." Two specific questions should be addressed:

- What is the definition of the "regulated MS4 boundaries"?
- Some MS4s have significant areas that have never drained to receiving waters outside the cities (landlocked areas). How are these areas addressed in relation to the MS4 boundaries in the TMDL?

Supporting Reason: The NLCD data is from 2002 and possibly not related to the boundaries of the cities' MS4 conveyance systems (the areas covered by their MS4 permit, and, thus, regulated). It is unclear what portion of the cities was included in the process outlined in Section 6.3 or from the associated maps.

11. **TMDL Section:** 6.3 Municipal Separate Storm Sewer Systems (MS4s) (pages 56 and 57)

To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to represent urban land use. . .The primary source of information for estimating sediment export from urban areas was "Review of Published Export Coefficient and Event Mean Concentration (EMC) Data," by the Environmental Laboratory of the U.S. Army Corps of Engineers. . . The current estimated load to receiving surface water is approximately 58,000 metric tons, which accounts for 5.8 percent of the average annual TSS load to the South Metro Mississippi River. . . Permitted MS4s are assigned an aggregate MS4 waste load allocation for average flow of 48,421 metric tons per year.

Statement of Action: The loading assumptions of the South Metro Mississippi TMDL, especially in regard to MS4s, should be recalculated.

Supporting Reason: The calculation process to assign urban loading rates for MS4s described in this section has nothing to do with the model that was used for the rest of the tributary area in this TMDL. It is based on an annual median export derived from literature values. It is inappropriate to treat MS4s so significantly different than all other identified point and nonpoint-source contributors in the TMDL.

12. **TMDL Section:** 6.3 Municipal Separate Storm Sewer Systems (MS4s) (pages 56 and 57) and 7.2.3 Urban stormwater best management practices (page 76)

To calculate the wastewater waste load allocation for regulated MS4 stormwater, the MPCA estimated loads using 2002 National Land Cover Data (NLCD) and TSS export coefficients for the NLCD land use classifications. The NLCD includes four developed land uses. These were assumed to

represent urban land use. . .The primary source of information for estimating sediment export from urban areas was "Review of Published Export Coefficient and Event Mean Concentration (EMC) Data," by the Environmental Laboratory of the U.S. Army Corps of Engineers. . .
The MPCA selected 2002 as a baseline year for MS4 stormwater. . . Any new BMPs implemented after the baseline year can be applied toward meeting the waste load allocations.

Statement of Action: The link between the methods used for calculating MS4 loads and the inability for MS4s to account for BMPs installed before 2002 is inappropriate and should be revised.

Supporting Reason: There are BMPs that were in place before the 2002 baseline that will not receive credit and were not used to offset the calculations in determining the load from urban areas since it was calculated based on impervious surface only. The calculations for the TMDL in Section 6.3 did not include stormwater BMPs that are in place in many areas of the cities. If BMPs installed before 2002 were not included in the modeling, then BMPs should not be included in the baseline condition for all urban land.

13. **TMDL Section:** 6.3 Municipal Separate Storm Sewer Systems (page 57) and 7.2.3 Urban stormwater best management practices (page 76)

The export coefficient for new development was assumed to be 112.5 lbs per acre per year. . . 112.5 lbs/acre/year from newly developed areas . . .

Statement of Action: Provide a definition, including timeline, for "new development" and "newly developed areas."

Supporting Reason: A date must be set to determine when "new development" begins in relation to the TMDL. Will this timeline be immediately, after approval of the TMDL or after the implementation plan is complete?

14. **TMDL Section**: 7.2.3 Urban stormwater best management practices (page 76)

Rather than implement BMPs included in the TMDL implementation plan, permittees may choose to demonstrate that pollutant loads from their MS4 meet the target load of 169 lbs/acre/year from built up areas and 112.5 lbs/acre/year from newly developed areas and open-space developed areas. This proof can be accomplished through water quality monitoring or modeling. In the case of modeling, permittees will implement BMPs as necessary to achieve the target concentrations.

Statement of Action: The modeling process that MS4 permittees can utilize needs to be more fully described.

Supporting Reason: It is irresponsible to offer MS4s this alternative and not provide any detail on how the process will work during the comment period. MS4s are not able to provide meaningful comments (including reasonableness of approach and ability to perform) on what could be a very important option for them. The process is currently summarized in a three sentence paragraph with no details. At a minimum, the MPCA should provide a timeline of when details of this modeling process will be available to MS4s. Modeling completed by the thirty

cities that were required to complete nondegradation reports should be acceptable for this process.

In summary, using information from the draft TMDL, regulated MS4s are responsible for 5.8% of the total load of the South Metro Mississippi River TSS impairment and make up 6.4% of the land area. MS4s will be required to reduce this load by 25% as presented in the draft TMDL. This reduction from MS4s is less than 5% of the total reduction needed to meet the TMDL goal and is smaller than the 6% margin of safety in the loading capacity calculations used in the TMDL report. The estimated cost for this very minimal reduction is $843,295,000 for 217 MS4s (159 of which are cities), or $3,922,302 per MS4. This is an unacceptable cost/benefit analysis for the City of Woodbury and likely for many other MS4s.

The TMDL should not be finalized or issued until the specific comments listed here are addressed in a meaningful way for stakeholders. The permitted MS4s should be engaged as stakeholders in addressing and resolving the comments. MS4s are committed to working with the MPCA to address and resolve these issues.

Sincerely,

Mary Giuliani Stephens
Mayor

Sharon Doucette
Environmental Resources Coordinator

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May 29, 2012

Mr. Robert Finley
MPCA
12 Civic Center Drive, Suite 2165
Mankato, MN 56001

Re: Comments on the Draft South Metro Mississippi River Total Suspended Solids TMDL Report
WSB Project No. 2092-00

Dear Mr. Finley:

We have reviewed the draft TMDL document and request the MPCA give consideration to incorporate the comments:

1. **TSS concentrations upstream of Lock & Dam 1 meet or exceed the TMDL target**: The TMDL Report States that the TSS concentrations upstream of Lock and Dam 1 meet or exceed the TMDL target of 30 mg/L. The following text is from page 28 of the TMDL Report:

   "The long-term TSS concentration is 24 mg/L in the Mississippi River at Anoka, compared to 20 mg/L 24 miles downstream at Lock and Dam 1, in the heart of the Twin Cities metropolitan area"

   In fact, the flows in the Mississippi River above Lock and Dam 1 are improving the water quality, helping to attain and maintain the water quality standard, and are not contributing to the impairment (in a manner similar to the wastewater treatment plants that are discharging at concentrations less than 30 mg/L – see page 53 of the TMDL Report).

   Requested Consideration:
   The WLA for MS4 stormwater sources should be revised to reflect the facts above. The form of these revisions requires discussion and negotiation among MPCA, USEPA, and the affected regulated stormwater sources. Options could include:

   - Exclude the entire drainage area for the Mississippi River above Lock and Dam 1 from the TMDL study area
   - Consider the permitted discharges from the regulated MS4 permittees in this drainage area to be similar to the discharges from wastewater treatment facilities that are below the 30 mg/L target. Adopt TMDL language similar to that on page 53 of the TMDL

Report: *"Because this effluent concentration is less than the water quality standard of 32 mg/L, discharge from these facilities will remain below the water quality standard, thereby helping to attain and maintain the standard. For such facilities, which are listed in Appendix A, compliance with NPDES permits will be interpreted to constitute compliance with the TMDL"*.

- Eliminate the 25% load reduction for all permitted MS4s, in light of this fact and other reasons.

At a minimum, the MPCA should explain why, in light of these facts, the drainage area above Lock and Dam 1 should be included in this TMDL study area and/or why the permitted MS4s above lock and Dam 1 should have a required load reduction.

2. **MN River TMDL loading should be an input boundary condition**: This TMDL should be revised to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. As written, the loading from the Minnesota River Basin in the modeling that supports the final allocations does not match the loading targets for the basin in the Minnesota River Turbidity TMDL.

   Requested Consideration:
   Revise the TMDL to include the results from the Minnesota River Turbidity TMDL as an input boundary condition. Revise the underlying models and revise all the allocations accordingly. The Minnesota River modeling Scenario 5 should be linked to the South Metro Mississippi modeling system (instead of Scenario 4, see page 45) and the new model results should serve as the basis for a new set of allocations for this TMDL. The same action should be taken for the Cannon River Basin and Vermillion River Basin, based on the text on page 47 of the TMDL Report.

3. **Baseline set at no BMPs**: The baseline for the MS4 WLAs for this TMDL should be set with no BMPs in place at all. It should not be set based on year of the 96th percentile flow condition.

   Requested Consideration:
   Please revise the baseline for the MS4 WLAs as the condition with no BMPs in place. Please remove or disconnect the baseline from a specific year.

4. **Insufficient cost estimates provided**: This TMDL Report includes a cost estimate only for achieving the MS4 WLA. This does not meet the statutory requirement for the preparation of a TMDL.

   Requested Consideration:
   Include "a range of estimates of the cost of implementation of the TMDL" in this TMDL Report. This range of estimates should include the cost to achieve all the allocations, including the LA.

   Should statement of action #7 not be accommodated in the TMDL the current cost estimate grossly underestimates the cost of compliance. The current cost estimate is based on traditional BMPS to achieve the 25% TSS reduction. However, if BMP's

constructed prior to 2002, that are removing 60-90% of the TSS in urban storm water, are excluded from the MS4's implementation plan; then traditional BMP's will not be successful in achieving the 25% TSS reduction. Advanced BMP's, such as chemical treatment systems and filtration systems may be the only way to achieve this standard for many of the MS4's, and this cost has not been factored into the TMDL. Please revise the cost estimates.

5. **No model calibration or sensitivity analysis for urban discharges**: It appears that the modeling for this TMDL did not include any calibration to validate or check the reliability of the model results for the loading from permitted MS4s. It also appears that no sensitivity analysis was performed for the loading from permitted MS4s to identify which variables had more or less influence on the model results.

   Requested Consideration:
   Perform calibration and sensitivity analysis for the elements of the model directly related to the permitted MS4 loading. If it is impossible to separate these elements in a model of the scale and/or type used for this TMDL, use a separate type and/or scale model to address loading from permitted MS4s.

6. **25% MS4 load reduction is arbitrary and ineffectual**: The 25% load reduction for all permitted MS4s in the entire TMDL study area appears to be arbitrary and ineffectual. This load reduction also serves as the basis for the target loading rates. This load reduction is not supported by scientific evidence or modeling results.

   Requested Consideration:
   Please reconsider whether the 25% loading reduction is warranted and/or sufficiently supported by scientific data or modeling results.

7. **Trading**: There are huge cost differentials between BMPs on urban land compared to BMPs on non-urban land. This difference in cost-effectiveness calls out for a viable trading program that includes permitted MS4 cities.

   Requested Consideration:
   The TMDL Report should include more detail about the potential of trading. The MPCA should commit to the development of a viable trading program that includes permitted MS4 cities. The trading program should also include funding efforts to address non-CWA-mandated activities (stream bank erosion control, ravine stabilization, hydrologic controls, etc.) that are far more cost-effective than many urban BMPs. The MPCA's trading development commitment should include specific timelines and interim milestones.

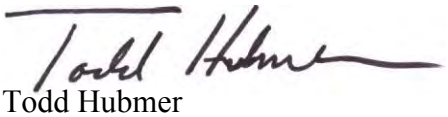
8. **Defer the MS4 WLA load reductions**: The vast majority of the TSS loading to the Mississippi River is from unregulated, non-urban sources. Imposing load reductions on the regulated urban sources should be deferred pending confirmation that the large unregulated sources can be effectively reduced.

Requested Consideration:
Defer the imposition of the TMDL load reductions on the regulated sources until after it has been demonstrated that reasonable progress can be made in reducing the much larger loads from the unregulated sources. If such reasonable progress cannot be demonstrated, consideration should be made to declare certain sources "irretrievable" under applicable federal rules and to restructure the applicable standards and TMDL requirements accordingly.

We request that the MPCA take into consideration the requests for consideration provided in this comment letter. We also support the effort of the Minnesota Cities Stormwater Coalition (MCSC).

Sincerely,

WSB & Associates, Inc.



Todd Hubmer
Vice President

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