Item 6A.
BCWMC 7-18-13

Memorandum

To: Bassett Creek Watershed Management Commission
From: Technical Advisory Committee
Subject: Summary of P8 Model and Recommendations
Date: July 9, 2013

The Technical Advisory Committee (TAC) forwards the following summary and recommendations to the Commission for its consideration, based on the June 6, 2013 TAC meeting discussion of the completed watershed-wide water quality (P8) modeling. The June 5, 2013 "Bassett Creek Watershed-Wide Water Quality (P8) Modeling Study" memo from Barr Engineering Company includes the details about the project and recommendations for future use and refinements.

1. Watershed-Wide Water Quality (P8) Modeling

The P8 (Program for Predicting Polluting Particle Passage through Pits, Puddles and Ponds) model predicts the generation and transport of stormwater runoff rates and pollutants in urban watersheds, including the influence of treatment practices. From 1993 through 2000, the Bassett Creek Watershed Management Commission (BCWMC) constructed water quality (P8) models to model total flow and phosphorus loadings to lakes and streams within the Bassett Creek watershed. At that time, the models were used to evaluate stormwater treatment requirements associated with meeting the BCWMC lake water quality goals. Later, the P8 models were used to evaluate treatment methods for meeting the approved Total Maximum Daily Load (TMDL) allocations for phosphorus for Medicine, Sweeney and Wirth Lakes.

This water quality modeling project was initiated in 2012 by the BCWMC to update the existing Bassett Creek P8 models and to create a watershed-wide P8 model. Eleven P8 models, including approximately 600 ponds and wetlands, were created from the updated modeling. The updated models include all known treatment practices completed as of summer 2012. The models simulate the quantity/quality of stormwater runoff discharged to Bassett Creek between 2001 and 2011. The model results were compared with the Bassett Creek WOMP station monitoring data as a check on the model calibration.

2. Uses of P8 Model

A major use of the watershed-wide P8 model is to target, prioritize and track the progress of the BCWMC and the MS4s towards Total Maximum Daily Load (TMDL) implementation for impaired water bodies. This applies to impaired water bodies within BCWMC, and downstream of Bassett Creek (such as the Upper Mississippi River bacteria and the South Metro Mississippi total suspended solids (TSS) TMDLs).

It is expected that the P8 modeling will be useful in the future development of the Bassett Creek Watershed Restoration and Protection (WRAP) study. Such a study would include preparation of TMDLs for the remaining impaired waters in the watershed and preparation of protection plans for selected non-impaired waters in the watershed.

The updated P8 model can also be used to estimate the loading reduction that will be achieved by proposed or completed projects, which dovetails into the MS4 Permit/TMDL reporting. The proposed or completed projects could include those that come under BCWMC review (e.g., development projects) and BCWMC CIP projects.

Future updates and the addition of greater detail to the models should be performed or reviewed by the Commission as needed. Two areas of potential revision to the P8 modeling were identified during the cities' and MS4s' preliminary review of the updated mapping:

- A portion of the Crane Lake watershed (in Minnetonka) that did not drain directly to Crane Lake now drains to Crane Lake. This should be revised in the next update of the P8 model.
- The drainage patterns in the Hidden Lake area, southwest of Medicine Lake (in Plymouth) need to be evaluated to address conflicting information.

3. Recommendations

The TAC recommends that the BCWMC maintain the P8 model and be the official "keeper" of the model. Either the BCWMC or the member cities could revise the P8 model. If the member cities revise the model, the BCWMC should review and approve the revised model; upon BCWMC approval, the revised model would become the new version of the P8 model. This way the BCWMC will always have the most recent version(s) of the model, which will help to reduce confusion regarding model versions.

The TAC also recommends that the BCWMC update the P8 model annually, in anticipation of TMDL reporting for MS4 permits. The model would be updated based on best management practice (BMP) information provided by the member cities, capital improvements completed by the BCWMC, and development/redevelopment projects completed in the watershed. The BCWMC would develop a summary report regarding the model results that the member cities could use for their MS4 reporting. The TAC further recommends that the TAC develop guidelines for the types of BMPs to be included in the P8 model updates and the schedule for performing the updates.

Recommendations

1. The TAC recommends that the BCWMC maintain the P8 model and be the official "keeper" of the model. If the member cities revise the model, the BCWMC should review and approve the revised model.
2. The TAC recommends that the BCWMC update the P8 model annually, in anticipation of TMDL reporting for MS4 permits. The member cities would provide the BMP information to be included in the model. The model would also include completed BCWMC capital

improvements and development/redevelopment projects completed in the watershed. The first update should also a) incorporate the drainage changes in the Crane Lake watershed, and b) resolve the conflicting drainage pattern information in the Hidden Lake area, southwest of Medicine Lake.

3. The TAC recommends that the BCWMC develop a summary report regarding the model results that the member cities could use for their MS4 reporting.
4. The TAC recommends that the TAC develop guidelines for the types of BMPs to be included in the P8 model updates and the schedule for performing the updates.