

Barr Lake/Milton Reservoir Watershed Association
 BMW Board Retreat
 November 28th, 2017 9:00 am – 3:30
 Metro Wastewater Reclamation District – Northern Treatment Plant

Minutes

Board Attendance:

Steve Lundt – Metro
 Chris Douglass - ECCV
 Dan Delaughter – L/E WWTP
 Laurie Rink – FRICO
 James Boswell – Thornton
 Charlene Seedle – South Adams

Sarah Reeves – SPCURE
 Emily Jackson – Metro
 Lisa Hollander - Metro

Public Attendance:

Amy Conklin – BMW Coordinator

Dan welcomed the group and everyone introduced themselves. Orren West gave brief presentation on the Northern Treatment Plant. He has been giving many tours including groups from Saudi Arabia. The facility is rated for 24 MGD of capacity and is currently treating 4 MGD. The plant was designed to be expanded to 60 MGD. Some of the treatments are cutting edge including a robust biologic odor control system. The entire site is contained within a slurry wall so no surface or ground water escapes from the site without treatment. The plant was designed to be a community amenity with an effluent pond that is open to the public along with bike and pedestrian paths. There is also a Co-Generation plant onsite generating as much as 350 Kilowatts from reused gas. The Phosphorus (P) in the effluent is 0.1 mg/L which is analogous to drinking water treatment. **Amy** was encouraged to set up a stakeholder meeting at the facility for later in 2018.

Before the group began work, they paused to recognize and thank Laurie for her many years serving as BMW Chair. Thank you, Laurie!

Implementation – Phased TMDL vs Adaptive Implementation – The purpose of the agenda item is to understand the difference between a phased TMDL and Adaptive Implementation enough to draft a white paper on the issues. Sarah made a brief presentation and requested the Board ask questions to help define the outline of the white paper. A phased TMDL has all the elements of standard TMDL but accommodates the significant uncertainty with the information required to develop wasteload allocation. The wasteload allocations in the BMW TMDL take into consideration the high level of uncertainty in the goals/targets of the TMDL.

In BMW's case, the TMDL is for pH and dissolved oxygen (DO) using P as the surrogate. It is assumed that if P concentrations in the lakes are reduced, Chlor a levels will be reduced and pH will also be reduced while DO levels will rise. However, the relationship between the four (4) water chemistry species (pH, DO, P, Chlor a and, potentially Nitrogen) is not sufficiently understood so that assimilative capacities, target water quality goals or standards and wasteload allocations can be made with enough certainty. The key concept of phased TMDLs is that more information can be gathered to better refine the assimilative capacity estimates, water quality goals or standards and wasteload allocations, without re-opening the TMDL process. This differs from a staged TMDL where the water quality endpoints, standards, are known but it will

take more than one stage for them to be achieved. The difference between staged and phased TMDLs is an important concept to include in the white paper.



Because our TMDL is phased, we are using an Adaptive Implementation approach to achieve the TMDL. Adaptive Implementation allows for water quality improvements to be started even with the uncertainty of the data regarding water quality in the receiving waters. In the BMW TMDL, it was assumed that Publicly Owned Treatment Works (POTWs) would begin improving wastewater treatment in response to Regulations 85 and 31. As POTWs begin wastewater treatment efforts to meet the requirements of the regulations, BMW would continue to monitor the watershed and determine what effects the improvements had on water quality.

At the same time, BMW began studies to better understand the relationships between pH, DO and the other water chemistry species. For several years, limnocorrals were installed in Barr Lake creating 'mini-lakes' where P levels could be artificially lowered and the pH and DO responses observed. In addition, BMW pursued other implementation options such as in canal and in lake treatments. BMW has also updated the original watershed and lake models using more and more recent watershed data.

One result of the modeling and limnocorral studies is support for the 0.1 mg/L P goal. The group discussed how we could determine when the 0.1 mg/L P goal has been sufficiently tested so that the level of certainty is sufficient. When the level of uncertainty has been reduced, would the TMDL enter a second phase or would it become a regular TMDL? A description of the steps taken to reduce uncertainty and the results should be included in the white paper.

The Board discussed the need to include ammonia (NH₃) in the data evaluation since segments in the BMW watershed has been added to the 303 d list of impaired water bodies. The conclusion was to ignore NH₃ in the white paper, but to continue to model it and measure levels in the lakes. All the nitrogen species are being monitored and Steve Lundt has begun to evaluate the impact of the N:P ratio on Chlor a. There is still a lot of uncertainty regarding the relationship of water chemistry species in the watershed which can also be included as a concept in the white paper.

The Board discussed the audience and purpose of the white paper. It was concluded that the purposes of the white paper would be to: describe the uncertainties in the TMDL; what has been done to reduce uncertainties; the results of those efforts; and a discussion of future actions to continue to implement the TMDL using Adaptive Implementation. The white paper can act as a description of the path forward with a discussion of background information. The audience will be the BMW Board and Stakeholders. While there isn't a desire to submit the paper, at this point, to the regulators



there was agreement that we want to keep the Water Quality Control Division and Commission updated on our progress.

The Board discussed hiring a consultant

to draft the white paper and concluded that it was best done internally. **Steve, Laurie, Sarah, Dan and Emily** volunteered to work on a draft of the white paper. The goal will be to keep the paper as a short summary of around two (2) pages. Later during the meeting, these same five (5) people agreed to include a discussion of site-specific standards in the paper. See the section below on Implementation for the discussion of site-specific standards.

The Board discussed the Adaptive Implementation Plan (IP). The IP has two (2) parts; one part to address the uncertainties in the TMDL, and the other part about implementation actions and strategies to achieve the TMDL. Modeling showed that even if there were no additional loads to the lakes, the water quality would not improve for decades because of the internal loading. The Board noted that it is typically better to add addendums to the TMDL documents as opposed to re-opening the process. We have updated the model and the projects plan and schedule and will continue the strategy.

Since the watershed has no more assimilative capacity and the wasteload allocations are not close to being achieved, and, even if they were, it would be decades before water quality standards were achieved, it is frustrating that discharge permits are continuing to be issued in the watershed. One purpose of the retreat is to make sure that all Board members are in agreement about the need for more control over the issuance of additional discharge permits in the watershed. In addition, it would be desirable to have a process or plan in place to respond to external forces on the TMDL, such as new discharge permits.



The Board agreed that the working outline of the white paper should be:

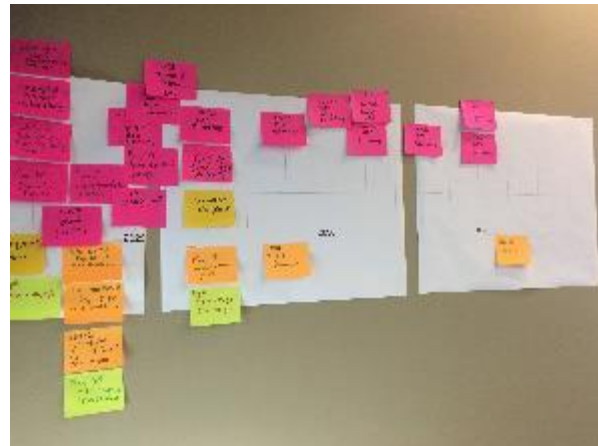
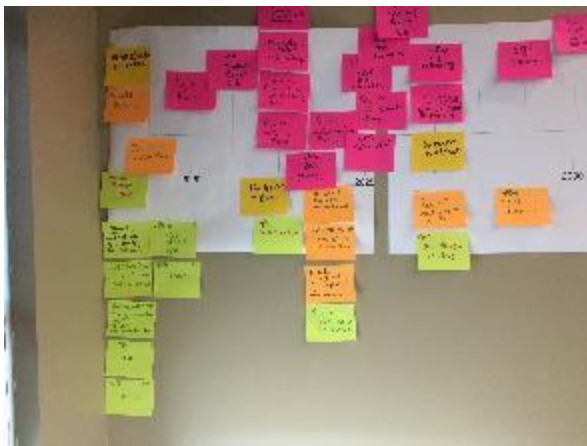
- Summary information/background/context – this should include a list of sources of pollutants in the watershed:
 - Point source
 - Stormwater
 - Nonpoint source
 - Background
 - A discussion of Regulations 85 and 31 and their impacts to the TMDL
 - The goals of 0.1 mg/L P, 0.025 mg/L chlor a and pH of 9 or less.
- A consideration of how to include other entities in the organization and who they might be.
- Definitions, including

- Phased TMDL
- Staged TMDL
- Adaptive Implementation
- A discussion of uncertainty including the topics of uncertainty (water chemistry species) and what level of uncertainty is acceptable.

Section 6 of the Watershed Plan Update is a good resource to use in further refining the white paper.

Implementation – Overlay of IP on Timeline - In order to continue to adaptively implement the TMDL, the Board focused on developing a timeline. It was stressed that while members may be able to achieve lower levels of pollutants in their effluent before regulations 85 and 31 are in effect, they are not committing to achieving those numbers as part of this planning exercise. The new stormwater monitoring station may assist in determining the benefits of stormwater improvements planned in Denver to water quality.

The Board posted sticky notes on a timeline provided by Sarah to illustrate when regulations would come into effect, when POTWs were planning to achieve improvements, the begin and end of the incentive program and other efforts that influence achieving the TMDL. A photo of the timeline with the sticky notes is shown below. The culmination of all the regulatory efforts will be at a Water Quality Control Commission (WQCC) hearing in 2027. If BMW wants to pursue different standards than those that will be established in 2027, they need to be proposed long before then. The work of the Board for the next five (5) or so years will be to determine if site-specific standards will be pursued, if so, what efforts are needed to have them in place for consideration at the 2027 hearing.



Board Picture – the Board took a break so Amy could take a photo. It is adorable.

With the schedule for the work outlined, the next step is to consider the organization's resources and how they can be used to continue achieving the TMDL. Dan presented a working 5-year budget for the group looking at what expenses we might have in preparation for site-specific standards. There would be a lot of data required. Other stakeholders effected would need to be

consulted on what data they would want. Data collection would need to start within the next 5 years.

The fundamental questions to be answered are: if site-specific standards are needed; is a Use Attainability Analysis (UAA) needed; are better definitions of the uses needed; and are the standards in the TMDL achievable? There was consensus that our watershed is unusual in that it drains an urban area and is fed by canals. There is a large background load that will be challenging to remove. In addition, the background pH of the watershed is 8.8, which will always make it hard to achieve the pH standard of 9. The geographic and demographic characteristics of the watershed may justify the need for site specific standards. The site specific standards would be for P, N and Chlor a. There was agreement that the uses don't need to be changed but may need to be better defined. Currently there is uncertainty about whether or not the uses are being met. Whatever decisions are made regarding the path forward, the actions that need to be taken, the Stakeholders will need to be included and approve before the decisions are final.

5-Year Priority Projects List																				
Project	Model Refinement/Standards Development		In-Ditch Treatment Evaluation & Implementation		Stormwater Status/Monitoring		POTW Options Analysis		Phosphorus Fertilizer Ban		Management/Routine Activities		Other Routine Activities (B&L, Technical)		Other Stormwater Efforts		Other Nonpoint Source Efforts			
	High Priority	Costs	High Priority	Costs	High Priority	Costs	High Priority	Costs	High Priority	Costs	Necessary Expenses	Costs	High Priority	Costs	Medium Priority	Costs	Low Priority	Costs		
2018	Develop 5-Year Modeling Plan Update for Stormwater Runoff Load Assessment	\$ 30,000	WATP Feasibility Study Cost-Benefit Analysis	\$ 20,000	Equipment & Installation Annual Monitoring/Performance	\$ 35,000	WQTPs to report out to BMW regarding nutrient reductions efforts	\$ -	Coordinate w/ Stakeholders, Develop Action Plan	\$ -	Routine Activities	\$ 80,000	Passive Activities	\$ 10,000	---	\$ -	---	\$ -		
2019	Base Cost Evaluation/Stormwater	\$ 15,000	In-Ditch Treatment Pilot Program	\$ 30,000	Annual Monitoring/Performance	\$ 3,000	WQTPs to report out to BMW regarding nutrient reductions programs	\$ 10,000	Monitoring/Field vs Efforts	\$ 20,000	Routine Activities	\$ 80,000	Passive Activities	\$ 10,000	---	\$ -	---	\$ -		
2020	Long-Term Modeling Scope of Services/BMP	\$ 200,000	---	\$ -	Annual Monitoring/Performance	\$ 3,000	WQTPs to report out to BMW regarding nutrient reductions achieved	\$ -	---	\$ -	Routine Activities	\$ 80,000	Passive Activities	\$ 10,000	---	\$ -	---	\$ -		
2021	---	\$ -	---	\$ -	Annual Monitoring/Performance	\$ 3,000	WQTPs to report out to BMW regarding nutrient reductions achieved	\$ -	Monitoring/Data Completion	\$ 10,000	Routine Activities	\$ 80,000	Passive Activities	\$ 10,000	---	\$ -	---	\$ -		
2022	---	\$ -	---	\$ -	Annual Monitoring/Performance - Larger Report	\$ 20,000	WQTPs to report out to BMW regarding nutrient reductions achieved	\$ 10,000	Monitoring/Data Completion	\$ 10,000	Routine Activities	\$ 80,000	Passive Activities	\$ 10,000	---	\$ -	---	\$ -		
5-Year Total	5-Year Total	\$ 365,000	5-Year Total	\$ 80,000	5-Year Total	\$ 74,000	5-Year Total	\$ 20,000	5-Year Total	\$ 40,000	5-Year Total	\$ 320,000	5-Year Total	\$ 50,000	---	\$ -	---	\$ -		
Notes	*5-Year Modeling Plan to include several other items that need to be identified separately. Update and incorporate (High) task, Q&A, report and update high/municipal loading information, improved computer BMP information.		*WQTP Evaluation will be needed to determine cost effectiveness of in-ditch treatment as compared with other capital projects. The driver is to prove new technology is allowed under Reg. 851 and to determine who will report out on data and what level of detail. Assumed detailed report after 5 years of data.		*Project will quantify baseline water quality above Burlington Ditch to evaluate stormwater station to be installed in 2018. High collecting data in 2018. Need to determine who will report out on data and what level of detail. Assumed detailed report after 5 years of data.		*5-Year Operating Costs Evaluation could be an initial project conducted by WQTPs. This is intended to be separate from in-ditch studies		*Driver Action has expressed interest in taking a trial rate in this of East		*Includes board fees, board support, loans, salaries, memberships, etc		*Includes \$15,000 I&E Budget, water quality monitoring and analysis, pump removal, equipment		*Monitoring and analysis to be used to inform by Metro AM. May need to increase routine sampling based on requirements from modeling consultants		*WQTPs to report out to BMW regarding nutrient reductions achieved		*WQTPs to report out to BMW regarding nutrient reductions achieved	

Sarah, Dan, Steve, Laurie and Emily volunteered to draft a white paper on if there is a justification for pursuing site specific standards. They will include the information in the white paper described earlier.

The Board discussed the potential for in-canal P treatment, concluding that there is no point in having a pilot study. The cost of the pilot would be comparable to just building the treatment facilities. They noted that the stormwater monitoring station was proceeding on schedule. The Board discussed the possibility of pursuing a ban on P in lawn fertilizer. In 2022, the WQCC will be holding a hearing on stormwater. They may be a natural partner in pursuing a ban. Other partners may be the Water Congress, the Wastewater Utility Council, and the Highline Canal Trail Conservancy. It will be important to be able to articulate the impact removing P from lawn fertilizer will have on P concentrations. Routine expenses were identified. It was noted that currently there isn't anything in the budget for non-routine efforts such as responding to permits issued for discharges without regard for the TMDL, biosolid application permits in inappropriate locations or corrosion control programs. All of these unexpected activities fall under the category of external influences on the TMDL.

External Influences on the TMDL – Emily presented a framework for consideration of how to address the external influences on the TMDL. There was agreement for a holistic strategy and a conclusion to continue the discussion at future board meetings. Additional external influences include Confined Animal Feeding Operations (CAFOs), illegal dumping, spills, new discharge permits and the positive impacts from stormwater treatment improvements. There was agreement that BMW does not oppose biosolid application but does want the application to protect water quality. There needs to be a thoughtful, consistent and fair approach to reacting to external influences. We may want to include a contingency in the budget for responding to external influences and we may want to retain an attorney. **Sarah** knows of an attorney who may be interested in learning more about BMW gratis and may be a good fit for our needs.

Information and Education – BMW Objectives – Laurie led a discussion on the information and education activities BMW has been doing. Originally, the Information and Education activities focused on getting participation in the TMDL process and was part of the 319 grant process. The TMDL requires very little Information and Education once the process is complete. The Board went over the scope of activities BMW currently supports, concluding that we get a good value for the resources expended on information and education. The concept that it's a service we need to provide to the community was expressed and that we need to leverage the work other stakeholders are doing.

There was consensus that the level of effort was appropriate. We need to continue to look for other opportunities to partner and to be visible in the watershed. The storm drain marking app was praised as a good program and the desire for Steve to start tweeting was expressed. JK The partnership with the CU Denver students may be an opportunity for BMW to gain some research information. **Amy** will set up a meeting with the Highline Canal Trail Conservancy for herself and **Steve**.

Amy digressed and got Thumbs Up approvals for the Intern job description, the October 24th meeting minutes and the tax return.

5-Year Planning Horizon – Prioritization – Dan asked if there were any topics we haven't yet covered. The next step is to look at the budget. **Dan** will develop a schedule for accomplishing the tasks in the budget projections for discussion at the January meeting. He'll include a line item for responding to external influences.

Steve agreed to take the lead on the technical parts of the white paper/memo. He'll look at Section 6 of the Watershed Plan Update to get started. **Dan** will take the lead on the phased TMDL versus Adaptive Implementation components of the white paper. **Sarah** will take the lead on the site specific standard approach. **Amy** was requested to send out the photo of the timeline/flow chart, the 2006 EPA memo clarifying TMDLs and Emily's slides on external influences.

Dan thanked everyone for their hard work and the meeting was adjourned.

