Barr Lake/Milton Reservoir Watershed Association
Technical Committee Meeting
Thursday, May 28th, 2015 (9:00am – 11:00pm)
Metro Wastewater Reclamation District, Denver

Draft MINUTES

In attendance:
Steve Lundt – Metro Wastewater
Laurie Rink –FRICO (phone)
Kelly DiNatale – United/ECCV(phone)
Linda Chynoweth – Aurora (phone)
Jessica DiToro –LRE
John Coffman – Centennial (phone)
Laurie Rink – FRICO (phone)
Tim Grotheer – Centennial (phone)
James Boswell – Thornton
Ken Wagner – WRS (phone)

Guests:
Amy Conklin – BMW

Steve introduced everyone.

1. **In-reservoir Treatment Plan**

Steve began by reminding everyone that we are following the Implementation Plan described in the TMDL. This phase is identifying the best alternatives to reduce loading from internal sources. The TMDL identifies internal loading at 4,000 kg/yr of Total Phosphorus (TP) loading that needs to be reduced to 1,000 kg/year. Ken Wagner explained how he intends to proceed with his proposed Scope of Work. Typically, there are three (3) treatments for sources of internal loading; dredging, oxygenation or TP inactivation. Dredging by far and away is the most expensive. People usually only dredge when there is a contamination problem. Disposal of the removed sediments is a challenge due to expense and premitting. He is confident that dredging will be too expensive to consider. He may need additional sediment information to evaluate the dredging option.

Inactivation is usually the best of the options. There are several different materials to use for TP inactivation. Ken has almost all of the information he needs to evaluate the inactivation option. Typical cost is about $3,000 to $6,000 per acre to treat.

Oxygenation has 2 different options. One is pure oxygen delivery. There are 4 ways to deliver oxygen. The other option is aeration to just mix the lake water. There are 3 ways to aerate. Ken is reasonably comfortable that the bulk of the evaluation with be for the inactivation and oxygenation treatment types.

Steve asked that Milton be included in the evaluation. Tim Grotheer asked about the experience at Cherry Creek Reservoir with aeration. Ken responded that the mixing at Cherry Creek did not oxygenate the very bottom sediments. He added that mixing will not eliminate any algae, it will just change the composition. Cherry Creek experienced a reduction in blue-green algae, but not chlorophyll a. There are downsides to any of the treatment options. The techniques are chosen based on the environmental situation and the goals of the treatment.

If Solar Bees are considered as an option, they cost about $50,000 each and, on paper, we would need about 30 of them. He added that usually more Solar Bees are required than claimed by the manufacturer to achieve effective mixing.

The proposed scope of work can likely be completed this calendar year. Ken thinks he might be able to finish the work in November. Included in the Scope of Work is one trip to Colorado by Ken for a meeting with BMW.

Steve has collected sediment cores at Barr and Milton. There is some data of P content in the top few inches and a few core samples. Ken noted that we really only need the upper 10 cm and use of an Ekman dredge is preferable to a core sample. There should be just a couple hundred acres of area that would need to be dredged. The highest concentration is likely to be in the deeper part of the reservoir where it would be the most difficult to dredge the sediments due to standing water. Ken suggested testing along the shallow, sandy sediments that are easy to sample, as well as from the deeper parts of the lake. Steve reported that there are some sediment data from the deepest part of Barr. The finer the sediment material, the higher the TP concentration. There is a huge gradient of sediment P concentrations based on the material particle size.

James asked if FRICO ever dredges. Laurie responded that they haven't dredged recently. There was a study to look at the dredging options that showed it was too expensive. It became a slurry type operation because all the sediments would be under water.

Tim liked the idea of alum dosing but noted that the permitting process is likely to be extended many years as this would be a new type of treatment.

The group discussed how in-canal treatment may support in-reservoir P inactivation. Ken noted that it will depend on how the alum floc was distributed. Harvey Harper thought that only about 25% of the flocc would migrate to the deeper part of the lake. Ken was requested to carefully evaluate how much capacity would be lost through treatment. Ken thinks that the in-reservoir treatment would only have to occur once with in-canal treatment providing the bulk of the P removal. Ken shared results of a lake with 90 years of data that demonstrated no loss of storage capacity from alum application.

Ken thought we might be able to bind P with Ca. However, if the pH falls below 8, the P tends to re-suspend. Once the P is bound with Alum, it is unlikely to re-suspend. Laurie noted that the Board will need to approve the work described in the Scope. We also need to resolve who will do the sampling and analysis. Steve thought he could collect the samples and deliver them to CSU who did the previous analyses.

2. TMDL Implementation - Preventative Source Control

Preventative Source Control is the next step in the TMDL process. P Fertilizer bans are one example. Scotts has already developed P free fertilizer. Amy inquired if maybe source control isn't what the MS4 permittees are doing as part of their permit requirements. **Amy** will send Steve a copy of a MS4 permit to see if they have any source controls.

3. Sampling for Cyanotoxins

Mindy May, with Colorado Parks and Wildlife (CPW), is making presentations to various groups about cyanotoxins from algae. Michelle Seubert asked if BMW would be interested in participating in testing for algal toxins. Specifically she asked if BMW would purchase a test kit of 18 strips for $500 or a smaller test kit. Samples collected for cyanotoxin analysis are expensive to analyze. Michelle suggested if there is a noticeable bloom, we would test every week. We know there will be an algal bloom at the end of June. Do we want to start weekly testing for 12 weeks beginning in

June? One question is what do we do with the data? One idea is a caution sign for toxic algae. Steve prefers the word harmful rather than toxic but he and Michelle were overruled about the language on the sign by CPW. There is no direct bodily contact allowed in Barr Lake, but there is incidental contact from fishing, boating and from dog recreation.

We think that Michelle would be responsible for the monitoring. Regular lab analysis is $500 per sample plus shipping for a total of about $600 per sample. The challenge is what to do with the information once it's collected. The situation with Barr Lake may be one where a health advisory would be inappropriate because of the limited contact and harm that might result. Another question is how cyanotoxins apply to the TMDL. Steve noted that we also don't test for e-coli even though he's confident it's present.

Tim doesn't see any problem paying $500 for the kit. He shares the concern about the value of having the data. It might help the park managers make park management decisions. The benefit would be greater to the people at the park rather than the BMW TMDL. It won't be submitted to the Data Sharing Network (DSN) but it might help Michelle manage the park better. There is a question about why isn't the state funding the testing of the cyanotoxin issue they are promoting. We might want to fund the first kit to support Michelle's justification for getting CPW to fund future testing. There are a lot of questions about when and how the toxins are produced. Laurie thinks that there are benefits to BMW to have the information about whether or not there are cyanotoxins in Barr Lake. There is a shelf life to the kits, so we should buy a smaller amount of strips. There would need to be an understanding that there wouldn't be any signage put out this year. The language will need to be discussed by the Board.

Amy will invite Mindy May to a Board meeting to explain why there is concern about cyanotoxins at Barr Lake. The Stagecoach Reservoir, where cyanotoxins were a problem, used their water for drinking in the park, which is not the case at Barr Lake. Michelle thinks she won't have flexibility for the language for the signs. There is a concern that if Michelle starts sampling, then she may be forced to put up signs despite her best judgment. **Steve** will report to Michelle that we like the idea but the Board has to decide.

4. Update with Third Creek

Third Creek is one of the water bodies in the BMW datashed with headwaters at DIA. In the past there have been fish kills in Third Creek from spills at DIA. Glycol is usually the contaminant of concern as it reduces dissolved oxygen (DO). Laurie reported that FRICO monitors at Third Creek and there have recently been significant DO standard violations. FRICO submitted their data and it might be listed on the 303d List prepared by the Colorado Department of Public Health and Environment. Detention systems at DIA are undersized for some of the bigger storms with some spills into Third Creek. Steve asked if DIA has to sample Third Creek. They have some MS4 requirements to sample but their sampling protocols may not be capturing stormwater adequately, which is why FRICO continues to monitor. Tim suggested they monitor for Chloride. James asked about enforcement actions. There are site-specific standards for DO in Third Creek which are still not being met.

Steve shared that DIA was initially a member of BMW because of water quality concerns. Third Creek does dry up, but there are some wetlands and pools that are always wet. When there's a big flow, there's some flushing that can result in fish kills.

5. Phased TMDL Schedule

Steve included this item as a reminder of the schedule in the TMDL. In 2015 we are scheduled to review/re-evaluate the TMDL. Next year we need to consider updating the model. Do we want to spend a year collecting water quality data for 2010 to 2015? Otherwise, we'll spend the rest of this year focusing on Ken's work and the in-canal treatment.

The biggest hydrologic change that may justify updating the model is the abandonment of the Burlington pumps. We might want to wait until the Northern Plant is operational before updating the model. The group decided to begin the data request in 2016 and focus on in-canal and in-reservoir treatment in 2015. The group also concluded that we don't need to meet in June

6. TMDL Implementation - Implementation Questions

1. Preventative Source Control? – ID, research, and report
2. In-reservoir Treatment Options? – explore, workshop, and report
3. ~~Biomanipulation – carp removal Spring of 2015, Metro permit~~
4. System Response to In-reservoir options? – refine models
5. ~~In-Canal Options? – study, modeling, and~~ implement

7. Next Meeting July 23, 9:00am to 11:00am at Metro