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July 15, 2013

VIA ELECTRONIC MAIL

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18 Wood Lake Drive Southeast
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Re: Byllesby Reservoir May 2013 Draft Phosphorus TMDL
Comments of Minnesota Center for Environmental Advocacy

Thank you for the opportunity to submit these comments on behalf of the Minnesota Center for Environmental Advocacy on the draft Byllesby Reservoir TMDL for phosphorus. MCEA is a Minnesota non-profit environmental organization whose mission is to use law, science and research to preserve and protect Minnesota's wildlife, natural resources and the health of its people. MCEA has statewide membership. MCEA has been actively involved in state water quality issues, including TMDL review, for many years and participates in a number of related policy and legal matters.

MCEA is concerned that the draft Byllesby Reservoir TMDL is not ready for approval because it:

- Is not established to achieve the applicable site specific standard at low flows, the critical season for this impairment;
- Contains a wasteload allocation that depends on an unsupported assumption of how much point source phosphorus is delivered to Byllesby Reservoir;
- Contains an unsupported load allocation requiring a 65 percent reduction in unidentified nonpoint source loads at critical low flow; and
- Provides no reasonable assurance that nonpoint source load reductions can be achieved.

As such, the draft TMDL does not comport with federal law implementing the Clean Water Act and MCEA requests that the draft TMDL be amended prior to adoption and submittal to USEPA.

Background

Byllesby Reservoir is a Class 2B impoundment on the Cannon River in Southeastern Minnesota. It was listed as impaired by excess phosphorus in 2002. The Minnesota Pollution Control Agency prepared a draft TMDL in 2007-2008, but did not finalize the TMDL or submit it for EPA approval because it was not targeted to achieve Minnesota's eutrophication standards for lakes and reservoirs. The MPCA prepared relaxed site specific standards for Byllesby Reservoir in 2009. These site specific standards, approved by USEPA in August 2011, are those that the current draft TMDL (May 2013) must address.

The following site specific criteria are to be met as a June through September summer mean across Byllesby's range of "lake-like" flows—from the summer 122 day one-in-ten year recurrence (10th percentile flow) up to a flow of approximately 940 cfs (~80th percentile summer flow):

- TP < 90 ppb;
- Viable chlorophyll-a < 30 ppb; and
- Secchi depth (transparency) > or = 0.8 meters.

The Low Flow Basis for the TMDL Does Not Represent the One in Ten Year Seasonal Low Flow

The MPCA established the 54,190 kg/yr TMDL target by conducting BATHTUB modeling aimed at achieving the site specific standards utilizing average **May**-September flows for a conceptual "lower flow" year midway between 1950 and 2003. This approach results in higher allowable loadings than those which would allow Byllesby Reservoir to meet the standards during the actual 122-day summer flow (**June**-September) with a one-in-ten year recurrence interval (122-day Q 10). This 122-day Q 10 is set forth in the MPCA case document submitted to EPA for its approval of the site specific standards:

> These values should apply over a range of flows from ~156 cfs (summer 122 day one-in-ten year recurrence, 90th percentile flow)…

Byllesby Reservoir Site Specific Nutrient Criteria Development, Public Notice Draft, MPCA, April 2009, page 7

MCEA notes that this low flow applicability of the site specific criteria was incorporated into EPA's approval justification document: "Lake Byllesby will be assessed in the context of the four-month summer average low flow with once in ten-year recurrence interval (122-day Q 10)…."[1]

Shown in Table 1 are MPCA's selected "lower flow" years of 1950 and 2003, along with the 10th percentile flow years for the full period of record and for the 30-year period of record, with May-Sept. averages utilized by MPCA in the draft TMDL, as well as the June-Sept. averages that comport with the site specific standards' applicability:[2]

Year	May-Sep Average	May-Sep Percentile Full record	May-Sep Percentile 30-yr record	June-Sep Average	June-Sep Percentile Full record	June-Sep Percentile 30-yr record
1950	185.5	6%		155.8	6%	
2003	734.9	61%	28%	453.9	44%	21%
1963	224.8	18%		164.3	**10%**	
1985	318.6	32%	7%	283.3	30%	**10%**

[1] EPA's Review of the Minnesota Pollution Control Agency Request for Approval of a Site-Specific Eutrophication Water Quality Standard for Lake Byllesby under Section 303(c) of the Clean Water Act, WQSTS# MN2010-355, USEPA, August 26, 2011, page 6.

[2] A spreadsheet showing flows for the entire period of record is attached.

The MPCA utilized the average of May-September flows, or 460.2 cfs as its low flow target, but the actual 10th percentile flows for the applicable June-September season are 164.3 cfs (full period of record) and 283.3 (for the 30-year period). MPCA's target is actually the 46th percentile flow (full record) and just over the 21st percentile flow (30-year record). As such, MPCA's draft TMDL allows Byllesby Reservoir to exceed the site specific standards between 21-46% of years for the applicable period (122-day summer season).

This is contrary to federal law, which specifies the TMDLs must be calculated to meet water quality standards.[3] MCEA requests that the MPCA re-calculate the draft TMDL such that Byllesby Reservoir meets its site specific standards during the four-month (June-September) summer average low flow with a once in ten-year recurrence interval—the standards approved by EPA. This can be done using the 10th percentile flow for the full period of record (1963) or the 30-year record (1985) or the average of both years.

Estimated Delivery of Point Source Phosphorus Loads to Byllesby Reservoir

The draft TMDL assumes that just 75% of the point source phosphorus discharged upstream is delivered to Byllesby Reservoir. This delivery percentage, described as the "maximum probable" is inconsistent with longstanding MPCA practice relative to phosphorus trading permits, which assume 100% delivery (or reduction credit). For example, a one-pound phosphorus reduction from a nonpoint source project anywhere upstream on the Minnesota River (some 300+ miles) is credited as a one-pound reduction for Rahr Malting Co. in Shakopee.

Appendix D of the draft TMDL is unclear about the method used to estimate this delivery percentage, but appears to rely on estimated monthly phosphorus entering Byllesby being lower than point source aggregate monthly loads from point sources (the latter presumably from monitoring records).

> The loading computations completed for the Byllesby TMDL have confirmed that during some low flow months, the estimated total phosphorus and orthophosphorus loads at the inflow to the Byllesby Reservoir are less than the sum of the estimated loads leaving the upstream wastewater treatment facilities (WWTF).

Draft TMDL, Appendix D, page 1.

First, it is not clear how the monthly TP and ortho-P at the inflow are determined and what is included in this calculation. Also unclear is whether and when the 25% of phosphorus supposedly retained in the prior month(s) is counted as "delivered" to Byllesby. (Appendix D states that "all or nearly all of the phosphorus loaded to the river system from the WWTF is eventually transported to the Byllesby Reservoir.") If delivered in the form of growing algae or senescent periphyton, is this counted?
MCEA requests that the MPCA provide substantial clarification of its 75% delivery estimation including data about the fate of the "sequestered" 25% and timing of its ultimate delivery to

[3] 33 U.S.C. §1313(d)(1)(C); 40 CFR 130.7(c)(1).

Byllesby for each of the four months (and relevant preceding months providing temporary sequestration) of the applicable summer season.

Fate and Role of Internal Phosphorus Loads in Byllesby Reservoir

The draft TMDL mentions that recycling of sediment phosphorus to the water column varies by year, but has been found by researchers to average 7% of TP and 16% of soluble reactive phosphorus inputs. (Draft TMDL at p. 24.) It is unclear how the BATHTUB modeling and ultimate load and wasteload allocations account for this recycling and expression of phosphorus during the summer growing season.

MCEA requests that role of internal phosphorus recycling and the fit of this recycled P in the TMDL load/wasteload allocations be clarified.

Load Allocation for Nonpoint Sources Appears Inaccurate and is Not Substantiated

Use of the appropriate low flow target as recommended above will, of course, lower the overall TMDL and alter the wasteload allocations, load allocation, and balance between point and nonpoint source loads.

That said, the draft TMDL as it stands estimates that nonpoint sources are currently contributing 53,398 kg/yr at low flow, although it is silent on what these low flow nonpoint sources might be. The TMDL then requires a reduction in nonpoint source loading of 65 percent at low flow (draft TMDL at p. 37). It is hard to understand how such a reduction is possible given that "During these critical conditions, overland runoff is not a significant source of phosphorus loading" (draft TMDL at p. 35).

MCEA requests that the MPCA identify the nonpoint sources or source categories that are contributing phosphorus at critical low flow seasons and substantiate the estimated amount of loading attributed to these sources prior to final adoption of the TMDL. Again, this should be calculated for the actual 122-day Q10 for the full or 30-year period of record. Should the load allocation not be substantiated, the MPCA must reduce the wasteload allocation for point sources accordingly.

There is No Reasonable Assurance that Nonpoint Source Reductions Will Occur

The draft TMDL does not contain adequate reasonable assurances that the ostensibly needed huge reductions in nonpoint source loading will occur. Assuming, *arguendo,* that the analysis recommended above substantiates a need for significant nonpoint source load reductions during the critical low flow season, and that these currently unidentified sources are not (as the TMDL states) from overland runoff, the draft TMDL is entirely inadequate in outlining the actions, timeframe, funding and responsible parties for achieving the load allocation.

The draft TMDL provides a summary that purports to provide reasonable assurance that implementation will occur, but does not actually address the relevant problem. The summary cites to the following items, none of which are aimed at achieving 65-74% reductions during low flow from "non-overland" runoff:

- Cannon River Watershed Management Strategy—this document contains a list of generic BMPs providing un-quantified levels of reduction for largely overland runoff sources;
- Barr Engineering 2004 report on phosphorus sources—this useful document estimates statewide and basin-wide phosphorus sources, noting the prevalence of nonpoint sources at high flow;
- Shoreland mapping of riparian areas—this project provides a terrific platform for siting BMPs to capture overland runoff, largely by identifying land parcels that do not comport with Minnesota's mandatory buffer law;
- LIDAR coverage—this is another great tool for siting of overland flow BMPs.

MCEA requests that, once the magnitude and nature of nonpoint source contributions of phosphorus to Byllesby Reservoir during the targeted 122-day Q10 are demonstrated, the MPCA provide reasonable assurance that there will be sufficiently-scaled adoption of low-flow BMPs through an identified programmatic delivery mechanism.

Conclusion

In summary, MCEA has a number of concerns regarding the completeness and accuracy of the draft TMDL for phosphorus in Byllesby Reservoir. We urge the MPCA to carefully review these issues and make any necessary adjustments to the draft TMDL prior to adopting it and submitting it to the EPA for final approval. Please consider this to be a petition to the Commissioner requesting that the MPCA's Citizens' Board consider the draft TMDL report (state) approval. Please do not hesitate to contact me should you have any questions or concerns related to these comments. Thank you for the opportunity to submit comments on the draft Byllesby Reservoir Phosphorus TMDL Report.

Sincerely,

Kris Sigford
Water Quality Director

Michael Schmidt
Water Quality Associate

Enclosure

cc: Dave Werbach, USEPA

Year	May	Jun	Jul	Aug	Sep	May-Sep Average	May-Sep Percentile	June-Sep Average	June-Sep Percentile	June-Sep 30-y pct	June-Sep 16y pct
1909			304	742	616						
1910	290	244	167	141	124	193.14	0.11	168.925	0.13		
1911	132.9	182	119	218	224	175.12	0.04	185.675	0.15		
1912	578.9	243	254	185	170	286.22	0.29	213.05	0.22		
1913	386.6	191	223	226	227	250.44	0.20	216.4	0.25		
1925											
1926		127	89.4	87.2	256						
1930											
1931	113	257	232	83	75	152	0.01	161.75	0.08		
1932	690	251	150	92	90	254.42	0.22	145.425	0.04		
1933	392	183	129	93	73	174.02	0.03	119.425	0.03		
1934	85	80	71	96	115	89.36	0.00	90.475	0.00		
1935	425	228	202	796	125	355.1	0.35	337.725	0.35		
1936	631	188	92	78	90	215.68	0.13	111.925	0.01		
1937	255	491	161	124	90	223.98	0.16	216.275	0.24		
1938	727	881	641	173	748	633.94	0.54	610.625	0.54		
1939	334	182	119	194	113	188.42	0.08	152.075	0.05		
1940	133	332	222	155	116	191.78	0.10	206.425	0.20		
1941	393	514	196	129	114	269.56	0.25	238.6	0.28		
1942	682	1755	436	563	1625	1012.38	0.76	1094.875	0.82		
1943	422	1604	1079	408	370	776.68	0.66	865.275	0.76		
1944	2966	2618	1465	346	229	1524.82	0.96	1164.525	0.84		
1945	1684	2602	1638	812	286	1404.34	0.92	1334.425	0.94		
1946	240	363	249	166	452	293.92	0.30	307.425	0.33		
1947	1043	420	305	219	300	457.38	0.39	310.975	0.34		
1948	431	187	157	197	128	220.1	0.15	167.425	0.11		
1949	228	194	208	146	100	175.24	0.05	162.175	0.09		
1950	304	180	140	193	109	185.48	0.06	155.75	0.06		
1951	994	1020	1824	1537	1521	1379.1	0.91	1475.5	0.96		
1952	738	688	651	336	247	531.82	0.41	480.25	0.48		
1953	1090	863	772	1211	222	831.44	0.68	766.8	0.72		
1954	685	1480	426	228	300	623.88	0.53	608.5	0.53		
1955	272	230	575	198	137	282.18	0.28	284.775	0.32		
1956	229	1286	630	430	193	553.5	0.46	634.525	0.57		
1957	191	512	1081	1190	414	677.52	0.58	799.25	0.75		
1958	281	472	197	168	161	255.58	0.23	249.275	0.29		
1959	127	443	273	263	498	320.78	0.33	369.15	0.38		
1960	2207	1829	648	196	241	1024.04	0.77	728.3	0.66		
1961	1169	710	285	301	218	536.6	0.43	378.5	0.39		
1962	741	493	603	276	631	548.82	0.44	500.7	0.49		
1963	467	246	165	122	125	224.84	0.18	164.3	0.10		
1964	315	160	141	109	446	234.18	0.19	214.075	0.23		
1965	1543	670	843	272	547	774.72	0.65	582.65	0.52		
1966	512	367	187	163	155	276.76	0.27	218.075	0.27		

1967	636	1470	686	288	163	648.62	0.56	651.875	0.59		
1968	386	511	1001	534	611	608.32	0.51	664	0.63		
1969	1161	436	734	256	181	553.56	0.47	401.7	0.41		
1970	1121	924	299	285	227	571.26	0.49	433.825	0.43		
1971	827	914	440	228	265	534.84	0.42	461.825	0.46		
1972	953	480	575	307	532	569.3694	0.48	473.4994	0.47		
1973	3026	609	494	674	777	1116.226	0.80	638.7557	0.58		
1974	994	1785	374	274	197	724.7032	0.59	657.3752	0.62		
1975	1703	2166	500	209	188	952.9448	0.71	765.5235	0.71		
1976	252	223	177	152	152	190.9813	0.09	175.7644	0.14		
1977	275	252	196	165	210	219.5353	0.14	205.7461	0.19	0.07	
1978	759	978	1388	470	253	769.6757	0.63	772.3051	0.73	0.48	
1979	949	520	434	2817	1121	1168.147	0.81	1222.923	0.87	0.72	
1980	405	599	246	320	548	423.6013	0.38	428.3484	0.42	0.17	
1981	997	437	1920	1849	1029	1246.623	0.85	1308.942	0.91	0.83	
1982	1899	1192	611	295	818	962.9387	0.72	728.9387	0.67	0.38	
1983	1823	715	2505	394	1226	1332.665	0.90	1210.133	0.86	0.69	
1984	2466	1352	660	290	231	999.7258	0.75	633.2233	0.56	0.28	
1985	460	276	197	250	411	318.6177	0.32	283.3178	0.30	0.10	
1986	1660	2046	1091	362	1276	1287.027	0.86	1193.715	0.85	0.66	
1987	333	304	449	466	231	356.547	0.37	362.5552	0.37	0.14	
1988	935	261	176	165	170	341.5561	0.34	193.1348	0.16	0.00	
1989	479	226	195	159	229	257.6549	0.24	202.2364	0.18	0.03	
1990	1115	1703	1651	1111	438	1203.697	0.82	1225.838	0.89	0.76	
1991	2852	1107	2052	1813	433	1651.471	0.99	1351.237	0.95	0.90	0.80
1992	873	696	867	494	989	783.74	0.67	761.55	0.68	0.41	0.27
1993	2686	4144	3343	2951	1823	2989.4	1.00	3065.25	1.00	1.00	1.00
1994	1440	1139	660	975	964	1035.6	0.78	934.5	0.77	0.52	0.40
1995	1148	840	578	810	384	751.84	0.62	652.8	0.61	0.31	0.13
1996	948	1100	457	312	272	617.92	0.52	535.3	0.51	0.24	0.07
1997	760	575	1977	2302	1746	1471.9	0.95	1649.9	0.97	0.93	0.87
1998	1469	2408	1577	695	377	1305.14	0.87	1264.175	0.90	0.79	0.67
1999	2944	1579	1223	819	650	1443.04	0.94	1067.8	0.80	0.59	0.53
2000	858	2732	1850	441	291	1234.28	0.84	1328.475	0.92	0.86	0.73
2001	2543	2820	598	342	328	1326.16	0.89	1021.95	0.78	0.55	0.47
2002	520	1742	726	1189	661	967.7	0.73	1079.575	0.81	0.62	0.60
2003	1859	857	511	245	202	734.94	0.61	453.925	0.44	0.21	0.00
2004	968	3303	1533	744	1479	1605.46	0.97	1764.85	0.99	0.97	0.93
2005	1443	1374	478	290	919	900.78	0.70	765.225	0.70	0.45	0.33
2006	1615	1189	371	654	628	677	0.57	710.2596	0.65	0.34	0.20