

DRAFT LAKE AUGUSTA FEASIBILITY STUDY - RESIDENT COMMENTS & LMRWMO/BARR ENGINEERING RESPONSES

Comment Number	Reviewer	Reviewer Comment	LMRWMO (Joe Barten) Response	Barr Engineering (Greg Wilson) Response
1.A	Steve Treichel, Resident	The water quality trend in LA is downward. The three key measures of quality (TP, Chi a, and SDT) are worse in 2022 even after the alum treatment of the 2017-19 period.	The alum treatment did not have the desired effect in reducing long term phosphorous loads in the lake. This is why the LMRWMO has sought further study of the lake via this feasibility study.	No additional comments
1.B	Steve Treichel, Resident	Last year, summer of 22, was driest summer on record for MSP (11.52" short for June thru October period). Question: isn't it better to use normalized data when looking at TP load on LA. In other words over the 2013-22 period, cormorants contributed 36% load, internal 21%, and runoff 41%.	See response from Barr.	Yes, I agree with the question, which is why we only used the 2022 data to calibrate our water quantity and quality modeling. As discussed in Section 5.2 of the report, we then used normalized data (a continuous simulation of 2013 through 2022 water years) to simulate how lake water levels and water quality would respond over the long-term.
1.C	Steve Treichel, Resident	Anecdotal mention that Lemay Lake tests at 35 PPB TP. That is interesting since LA's TP is approximately 160. Everyone would be happy if LA were at 35 PPB TP.	Lemay Lake water quality is much better than Augusta, just adjacent to each other. We suspect the presence of a lake outlet has a lot to do with this.	No additional comments
1.D	Steve Treichel, Resident	The study forecasts a combined outfall of 40 PPB from ponds, tree removal, cormorant reduction, outlet creation. This is extremely encouraging. Is there a calculation available as to when LA will appear to be more clear by SDT standards given the reduction to TP load. Understand remediation will take time...any estimate of how long and to what standard...eg; aesthetics and swimming or other?	Unfortunately, there is not a calculation available or an estimate. Improvements to the lake's water quality are expected to be incremental over the long term and will require adaptive management, meaning a continual assessment every few years and re-evaluation of next steps, prior assumptions, and implementation strategies, given the dynamic nature of the lake system. With an outlet completed as proposed in a few years, new information may emerge, which may require more study. We do not expect a quick solution or only one solution to improve the poor water quality situation.	I would expect that improvements in Secchi disc transparency will be commensurate with reductions in TP loading that are realized over time after accounting for the fact that lake residence time would likely delay or mute the response for as much as a couple of years.
2.A	Kitty Haight, Resident	Previous information mentioned the far end of Lake Augusta is within the jurisdiction of the City of Mendota; is there clarification for that?	County property records show a portion on the north end within the City of Mendota. See Dakota County GIS website.	No additional comments
2.B	Kitty Haight, Resident	The cormorants certainly are a nuisance and have been shown to be a contributor to the phosphorus load. It would seem the "life styles of the cormorant" may require a bit more investigation to determine the most thorough manner to discourage their disappearance. Situations in other northern communities seem to involve more than the removal of dead trees. Has the DNR been consulted?	I agree. Further cormorant study was outside the scope of the grant that funded this Augusta Study. I would like to seek further input from an expert in cormorants prior to cutting down trees or doing other activities to manage their population. I have made some contact with Fish and Wildlife, DNR, and UofM folks, but has been hard to get their attention. I think having this study in hand will help get their attention. See also response to 3.C.	No additional comments
2.C	Kitty Haight, Resident	A mention was made in the report regarding the "lack of development of the lake shore." Is this a potential concern? It would be interesting to learn more about that. To that end, was the easement agreement between Augusta Shores and the City of Mendota Heights reviewed in this study and have the residents of AS contributed to the concerns for the lake in any way?	Lack of development is a good thing as it relates to water quality so it is not a concern.	No additional comments
2.D	Kitty Haight, Resident	Are there actions that the Augusta Shores Homeowners Association can take to improve the quality of Lake Augusta?	Every property contributes some level of pollutants to the lake, however, the necessary actions appear to be at a higher level than individual resident actions and are time is better spent on those larger capital project scale efforts. Of course, less fertilizer the better on the areas surrounding the lake, but the issues appear to be larger.	No additional comments
3.A	Leslie Campbell, Resident	At some point will the Minnesota Pollution Control Agency being in engaged as one of their objectives is to ensure clean water and would they have any funding to help clean Lake Augusta.	The LMRWMO in partnership with the City will likely pursue grants to improve the water quality of Lake Augusta from State agencies such as the PCA, BWSR, or DNR	No additional comments
3.B	Leslie Campbell, Resident	At some point will the businesses where some of the polluted water is coming from be engaged.? They may have ideas for solutions.	The businesses are obligated to improve their stormwater management to a higher standard when a site re-develops. We can consider outreach to businesses to implement retrofit stormwater management projects on their property.	No additional comments

3.C	Leslie Campbell, Resident	The Cormorants have been an issue for many lakes in MN and are there best practices that have been used on their lakes to control?	From preliminary research, removal of their habitat (the dead trees surrounding the lake) seems to be the best first step and then seeing how the population responds. However, prior to doing so, we will contact the MN DNR, Fish and Wildlife, and UofM researchers. The other practices we have researched involve culling of the population or oiling of eggs, likely in partnership with the DNR. It seems there is more DNR support for this practice when cormorants seem to be having a negative impact on fisheries. See also response to 2.B.	No additional comments
4.A	Tom Hanschen, Resident	Why only passive actions (draining and inlet treatment) are being proposed in the report and not any active actions (removal of TP, Chl-A via filtration or)?	Down the road, after other measures have been implemented, perhaps that could be again investigated as an option. Removal of TP trapped in sediment via dredging or filtration do not seem cost feasible and was therefore not considered as part of the study.	The 2017 alum treatment did work as evidenced by lower bottom water TP concentrations, but the continued effect of incoming untreated stormwater combined with the cormorants appears to have muted any benefit to recent water quality at the surface of the lake. I don't recommend the pump and treat option (active removal) as it is not usually cost-effective, but another in-lake alum treatment may be warranted again in the future.
4.B	Tom Hanschen, Resident	If the problem stems from "dirty inflow" why not pump from Pond 1 and/or Pond 2 to the Highway 62 drain system and by-pass Lake Augusta altogether?	Multiple pumping systems are likely cost-prohibitive and though the inflow has dissolved phosphorus, the treated concentrations following BMP implementation should be cleaner than Lake Augusta's existing water quality, thereby in the near-term, providing cleaner water to flush out the lake, once a lake outlet is established.	See the red text (and strikethrough) that I added to your statement to clarify this. It was a good question--one that we had also considered in the BMP planning, but similar to the response in Row 30 (below) changing watershed flows usually result in unintended consequences, such as exacerbating downstream problems of lower than normal lake levels during drought conditions.
4.C	Tom Hanschen, Resident	If the cemetery is a major contributor, shouldn't they also have a major responsibility in funding the clean-up? Even if the practices were "legal" at the time, look what is happening to DuPont/3M/... on their forever chemicals. Legal at the time but billions in settlements.....	Every property that drains to the lake is a contributor of some pollutants, including the residents, businesses, roads that drain water to the lake. We can only follow and ask what is required by law for landowners within the watershed to do and spend money on. See response to question 1.B.	No additional comments
5.A	Barbara Kaufman, Resident	As I read through this report again, I find it interesting that there was not a general test of the water in Lake Augusta to see what other chemicals are present. Like the blue sludge test in high school science class.	The tests performed were those deemed most necessary by the consultant to help facilitate and understand the lake chemistry and identify solutions.	There is not any other types of testing that I think were warranted for the problems that we were trying to address, especially given the fact that the grant funding is primarily tied to an excess nutrients impairment.
5.B	Barbara Kaufman, Resident	What is the level of salt in addition to phosphorus? It seems if run off water is an issue salt/chemicals used on the roads should be measured.	Chloride was tested as part of the monitoring and was considered in the consultants assessment of lake chemistry. - The MPCA Chloride Chronic Standard for class 2B surface waters is 230 mg/L, which is the highest concentration of chloride to which aquatic life, humans, or wildlife can be indefinitely exposed without causing chronic toxicity. The MPCA Chloride Maximum Standard is 860 mg/L, which is the highest concentration of chloride in water to which aquatic organisms can be exposed for a brief time with zero to slight mortality. - The highest chloride concentration at Lake Augusta measured in 2022 was 135 mg/l and the average of all samples taken during 2022 was 127.4 mg/l.	No additional comments
5.C	Barbara Kaufman, Resident	I've been looking at water issues from cemeteries and they're is some interesting info there.	We did not consider potential impacts from the cemetery, aside from drainage from the watershed which included the cemetery. Additional information on your findings would be appreciated Barbara.	I am not aware of any unusual issues arising from cemeteries.
6.A	Tom Kovarik, Resident	I strongly agree with almost everything in the report and I believe it accurately reflects the state of Lake Augusta and the best path forward that is known to us today.	No additional comment.	No additional comments
6.B	Tom Kovarik, Resident	See attached supporting information from Tom K. on cormorant feces estimates. Removal of the cormorants is a prerequisite for cleaning the lake's pollution, because, as I show in point 1 (below), my new and more accurate calculations, which are made in units of dried guano (let us define guano as dried bird feces and urine) show that more than 5 tons (a USA ton is 2000 pounds) of NEW dried guano are entering Lake Augusta each year, and not leaving it. Therefore, if we do not induce the large bird population (double breasted black cormorant and white egrets) to roost elsewhere, any pumping and cleaning and ridding of lake water will never catch up, much less exceed, the NEW 5 tons of dried guano entering the lake each year. Nor will we empty the lake's bottom soil of its accumulated pollution.	Additional information was provided by Tom regarding calculations of feces, which is attached. At the time that the report was created, the information compiled by Mr. Kovarik was utilized. It was necessary to complete the report to utilize the available data set at that time, which is reflected in the report. The project doesn't have remaining budget to revise the calculations already incorporated in the report, which are also conservative in nature and reflect best professional judgement by the consultant.	No additional comments

6.C	Tom Kovarik, Resident	I strongly agree that removal of dead trees near the shoreline and in the water are the best first way to try to rid the lake of nightly roosting large birds (black cormorants and white egrets). We will see no improvement to water quality until we succeed in ridding the lake of large birds. NOTE: If this fails, it will take one year after tree cutting to know that it failed, and another approach in keeping with strict federal laws protecting migrating birds will need to be studied and implemented.	Yes, if removal of the trees does not deter the cormorant population from inhabiting the lake, other measures should and will be considered. I am unsure of the timeline of other measures and it is possible that just one year may not adequately show whether it has fully worked or not.	No additional comments																
6.D	Tom Kovarik, Resident	I am worried that this report will result in dropping lake water levels too low, making the lake more of a large pond, losing its beauty and recreational attractiveness to all Twin Cities residents (not only to lakeshore owners). It is certainly true that the dead trees are the result of high lake levels especially from about 32 years ago, when Highway 13 was rerouted. However, lake levels have dropped 8 feet in the past about 4 years, as one can readily see on the dead tree trunks - the bright white stain. So be careful how much you drop the lake level, because we do not want our lake to get small, like a pond. I suggest revising the report to not drop the water levels beyond the 8 feet the lake has already dropped in elevation, in the recent approximately 4 years' drought.	This will be taken under consideration with future pumping and lake management. Long term drought conditions are impossible to predict but there may be benefit to not always pumping back down to the original lake Ordinary High Water level. However, there may be a necessity to draw it down to remove trees. There may also be value in bringing it back down to the original elevation to restore vegetation surrounding the lake. The future lake level due to pumping should be determined at a later date with further study.	See the response to the last comment; I do think there may be merit to leaving the lake level higher than the 832.5' OHW long-term.																
6.E	Tom Kovarik, Resident	The public has always had free parking and free access to Lake Augusta on the north end, Highway 62 service road, and it is used by the public.	There are varying degrees of public access. While the public may be legally able to get to the lake this is different than other formal accesses at other lakes. This can be addressed in the future.	No additional comments																
6.F	Tom Kovarik, Resident	Regarding this statement on page 14: "Dead trees have been noted on the lake going back further than 2013." Most of the dead trees were drowned about 32 years ago when Highway 13 was rerouted and the lake levels rose, drowning a few thousand trees. Be aware that when you cut down the trees, there are between 1000 and 3000 dead trees at the shoreline or in the water, depending on how big a tree must be to be counted. The costs in Appendix B-BMP cost estimates, strike me as too small. Did you consider that there are between 1000 and 3000 dead trees at the shoreline or in the water, depending on how big a tree must be to be counted? I suggest increasing these tree removal costs.	Barr staff consulted a tree removal company when coming up with the estimates for tree removal. I'll ask Barr to confirm this and expand on whether the contractor was on-site or not in creating their estimate. Perhaps a range of costs is more appropriate in general.	No additional comments																
6.G	Tom Kovarik, Resident	<p>On page 14, this table, I have changed some counts and dates based on observations, because these are more accurate counts and dates. I think this is an important change, a true one observed, it bolsters our case against the cormorants and white egrets as the principal culprits by far.</p> <table border="1" data-bbox="367 800 991 956"> <thead> <tr> <th>Modeled Timeframe</th> <th>Seasonal Period</th> <th>Equivalent Bird Counts (#/day)</th> <th>Combined Daily TP Load (lbs/day)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2022</td> <td>May 15-September 15</td> <td>600 cormorants 200 egrets</td> <td rowspan="2">(see tom's calculations in part 1, above)</td> </tr> <tr> <td>September 15-October 15</td> <td>3000 cormorants</td> </tr> <tr> <td rowspan="2">2021</td> <td>May 15-September 15</td> <td>600 cormorants 200 egrets</td> <td rowspan="2">(see tom's calculations in part 1, above)</td> </tr> <tr> <td>September 15-October 15</td> <td>3000 cormorants</td> </tr> </tbody> </table>	Modeled Timeframe	Seasonal Period	Equivalent Bird Counts (#/day)	Combined Daily TP Load (lbs/day)	2022	May 15-September 15	600 cormorants 200 egrets	(see tom's calculations in part 1, above)	September 15-October 15	3000 cormorants	2021	May 15-September 15	600 cormorants 200 egrets	(see tom's calculations in part 1, above)	September 15-October 15	3000 cormorants	I have been with Tom to observe the large amounts of cormorants and I understand the balance between being accurate but also conservative with these numbers. It is helpful going forward to continue to track population numbers. However, the report was created with the information at hand at that time and the calculations throughout the report reflect those original numbers. I think the case for cormorants being an issue is quite strong as reflected in the current report.	No additional comments
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6.H	Tom Kovarik, Resident	Will the rain basin be enlarged so more rainwater flows into Lake Augusta, through storm sewers or other means, to compensate for the water pumped out, and to speed up the time to clean water goals? That would also allow us to keep the lake levels up to some desired point, given that the long-term forecasts for Twin Cities weather are for less rainfall than historically, due to climate change, global warming, and Minnesota drying.	The study did not consider enlarging the watershed of Lake Augusta. I am not aware of this approach being pursued elsewhere and I do not believe the LMRWMO or City could obtain grant funding for such re-routing.	I don't think we would consider expanding the watershed, for several reasons: 1) wouldn't get permitted because it would change water yield for other watersheds 2) probably not feasible, or would incur significant cost to implement and make sure that added water yield gets proper stormwater treatment, and 3) more flow is likely going to result in greater bounce in the lake water levels which would likely exacerbate existing problems.																
6.I	Tom Kovarik, Resident	Why does the lake need to be lowered (beyond the current 8-foot drop in water level from the previous 4 years of drought)? There are between 1000 and 3000 dead trees near shoreline or in the water, depending on how high a tree needs to be to be counted. In January and February and the first half of March, I cross country ski around the shoreline daily, and the ice is 2.5 to 3 feet deep, so it can support a human, and a small truck, and heavy equipment to some degree. During that 11 week period, a small truck and lumberjacks could cut down all dead trees near the shoreline or in the water, such that they fall backwards into the woods, not into the water, and naturally rot, enriching the woodland soil. It seems to me there is no need to lower the lake in order to cut down the 1000 to 3000 dead trees.	There are short-term needs to lower the lake level to remove trees. Typically lake ice is most thin and unpredictable along the shoreline. The consultant reached out to a tree removal company who quoted the amount in the report. I do not think that leaving thousands of dead trees along the shoreline is the best long term approach. It would prohibit the potential for vegetation restoration around the shoreline, many of the trees would remain "propped up" by existing trees in the woods, this could then cause more trees to potentially die. Additionally, the slopes are so steep around the lake that many trees may eventually end up in the water, contributing more organic matter to the lake. See Barr response on long term lake levels.	The existing OHW is 832.5', which may be as much as 10' lower than the current lake level. While we never got into very many details about the lake level we'd try to manage to, we did talk to DNR about the idea of maintaining a lake level that is higher than 832.5, to which they indicated that we would not need a public waters permit. I don't think it would be a bad idea to leave the lake level at an elevation above 832.5', as long as it is typically maintained at levels in the range of 836' to 838'.																