

To: Sarah Strommen, Commissioner, DNR

CC: Dan Lais, DNR

CC: Scott Pearson, DNR

The Minneapolis Park and Recreation Board has now published their preferred plan for the Hiawatha Golf Course property in South Minneapolis. Your staff stated that you would not answer my questions about the MPRB's plan until the MPRB settled on a preferred plan. That has now happened. So, I am requesting a response to my original questions along with some additional questions. Although, some of my original questions do not, necessarily, relate to the MPRB's latest plan, I do not believe that the MPRB has totally abandoned the ideas put forth in the original plans, so I would also like a response to those questions.

Raising of the Floodplain.

The latest preferred design for the Hiawatha Golf Course property proposes to raise the property containing the new 9-hole golf course "above the normal level of Lake Hiawatha" to keep the property dry. It is unclear exactly how many acres the new golf course will use on the property, but I would guess it will be about half of the current property. Much of this property is between 809 feet or slightly higher. Ordinary lake levels are from 811 to 814 feet. So, this means that the MPRB proposes adding an extraordinary amount of fill to this property, up to 6-8 feet on a large portion of the property. My concerns are:

This will reduce the amount of flood storage available for the catastrophic flood events that have occurred 3 times in my lifetime. It appears that the neighborhood would lose about half of the currently available, unused floodplain storage. This is very concerning to the homeowners that have been protected by the dry 18-hole golf course during these 3 floods, especially considering that the proposed climate change would likely make these events happen more frequently.

Also, the plan to raise the golf course area above the lake level caused me to remember a response the Park Board made to the following question in one of the Community Advisory Committee hand-outs: "Why aren't we just using fill to protect the parks?" The following was the Park Board's answer: "The Hiawatha golf course is situated in a floodplain that temporarily stores flood waters during high creek flows and large rain events. Placing fill in a floodplain is not allowed without providing compensatory storage in the same area. If more fill were placed in the golf course, it would reduce the storage available to store flood waters and could exacerbate flooding in the watersheds to the north of Lake Hiawatha, as well as along Minnehaha Creek downstream of the lake. Additionally, placing fill in the golf course will add more load to the underlying materials and could increase the rate of settlement." So, now they are proposing to put massive amounts of fill onto the golf course, exactly what they said they could not or should not do without compensatory storage. Where would they possibly find compensatory storage in this area?

What will be the effect on floodplain storage? Also, what effect would the addition of this huge amount of fill have for the drainage of the near neighborhood on the northwest side of the golf course? The floodplain drops off precipitously from these homes to the golf course, promoting natural drainage from the neighborhood to the golf course. To me, common sense says that the filling in of this area will impede the natural drainage of this flood plain and back up water into the neighborhoods. This is of huge concern to the homeowners.

Pumping Water from the Neighborhoods.

MPRB modeling had shown that once the pumping at Lake Hiawatha stops, the ground water in the neighborhoods would rise up to one foot, so pumping would need to be done to get the water out of the neighborhoods. The MPRB has given no firm indication of where the pumping would be done under the newly proposed plan. I have previously discussed with your staff that to create a proper cone of depression the water could not just be pumped back to the golf course property as had been previously proposed by the MPRB. Your hydrologist stated that it must be pumped past the lake. I have seen no proposal that would do this. Where would this pumping need to be done, and where would the water need to go?

The 43rd Street Pipe. The new plan would still daylight the 43rd street pipe at the corner of E. 43rd St. and 19th Ave. S. With the reconstruction of this area of the park property with increased fill to elevate the golf course above Lake Hiawatha, how will this area drain? Are the properties between Sibley Park and this corner lower than the proposed golf course? If so, wouldn't this new plan inhibit the natural drainage of these properties to Lake Hiawatha, thus causing flooding of these neighborhoods? They already suffer temporary flooding during heavy rains.

During construction, how will homes be protected from flooding?

Phosphorus Mitigation.

The MPRB keeps stating that they will be doing phosphorus mitigation in this plan. I don't see much of anything in this plan that would do pollution mitigation. It just seems to be creating a larger lake. Do you see anything in this plan that would truly mitigate phosphorus to any great extent? If so, where and how?

The Berm.

The proposed plan will retain the berm that currently protects the golf course, but water will be on both sides of the berm. The proposal will use this berm as a walking/biking path. This seems to be a difficult item to construct and maintain considering the fact that water will now be on both sides of the berm. Plus, Lake Hiawatha has an extraordinary amount of water that flows through it, putting even more pressure on this berm. Is the use of this berm in this fashion even

feasible?

Lake Hiawatha, the Dumping Ground.

A more general concern is regarding the City of Minneapolis and their past history of using Lake Hiawatha as the dumping ground for storm water in this area of South Minneapolis. I have seen, while researching the history of flooding in Minneapolis over the past 40 years, that the City seems to always use Lake Hiawatha as the cheap solution to their storm water problems. We have been told by the City and MPRB representatives that they still see Lake Hiawatha as a solution to these problems, and over the past 3 years we have seen that this project is less about the golf course and more about just dumping more water on the property, especially with the City's current penchant for more building density. MPRB representatives had stated to us that they want to sell water storage to developers and other communities on this property to make money for the MPRB. Also, other municipalities in the Minnehaha Creek watershed seem to want to continue dumping more and more of their water into Minnehaha Creek rather than mitigating it. We have seen no plans that mitigate any water coming into Minnehaha Creek. What is your role in making sure that Lake Hiawatha, it's park, it's role as a floodplain, and the surrounding neighborhood properties are properly protected?

My questions submitted to you in March of 2019.

I have been awaiting the Minneapolis Park Board's new plans to see if there are any changes or improvements from their original plans for protecting the neighborhood homes. As far as I can tell, there are no changes to their proposed pumping regime, which is very concerning to me.

Loss of flood plain capacity - In correspondence with MPRB personnel, the MPRB's theory of protection appears to be based on the fact that the volume of the area containing water will not change. I agree that this is true. What I believe they are missing, or not understanding, is that part of this volume will be permanently filled with water (unlike today), so it will not be available for flood storage when heavy rains occur and water pours into this property from Minnehaha Creek and the surrounding neighborhoods. Excess water will then extend further into nearby low-lying neighborhoods. (Note: This has changed with the new plan where they plan on putting in fill.)

I had the following concerns when I looked at the modeling done by Barr Engineering:

Freeboard - Modeling was done with a freeboard of 0.5 feet. My research has found that Minnesota law requires a freeboard of one(1) foot for new construction. And FEMA recommends a freeboard of 2-3 feet for buildings. So, it appears that the MPRB's consultant did not use State of Minnesota or FEMA standards in their modeling.

2014 Flood Levels - The modeling done by the MPRB for Lake Hiawatha water levels did not include any modeling for the water level reached in the 2014 flood. The maximum level that they modeled was 814.2 feet, which is the high normal water level. No modeling was done for water levels above 816.2 feet, which is the level reached in the 2014 flood. So, there is no knowledge of what the flooding would be at the 2014 flood level with water taking up part of the current flood capacity. My concern stems from the fact that the water in the 1965, 1987 and 2014 floods came as close as across the street from my family's home on Longfellow. So, it is hard for me to believe that, with part of the flood plain already containing water, the water would not come onto our property.

Regarding the pumping in the neighborhoods:

The MPRB determined that pumping in the neighborhoods was necessary because, once pumping is stopped on the golf course property, modeling shows that the groundwater levels in the neighborhoods would go up.

Originally, only the Longfellow Avenue pump was envisioned, but further analysis by the MPRB showed that "the pumping rate defined in the original groundwater pumping analysis only using the drain system along Longfellow Avenue would not sufficiently protect lower basements several blocks west of the golf course (south of the intersection of E. 43rd Street and 17th Avenue S)."³ Note that this analysis used 0.5 feet of freeboard which is considered sub-standard. So, the modeling already shows that the groundwater levels will go up in the neighborhoods. This seems to be a risky venture for the MPRB.

The MPRB's documentation states that pumping will increase at Powderhorn Lake:

The MPRB document, Water Management Alternatives³, page 15, states that "we anticipate a slight increase in the long-term water levels in Powderhorn Lake ." If "all groundwater pumping stopped at the golf course, the modeling estimated an increase in the Powderhorn Lake water levels of 0.7-0.8 feet. ... Under the reduced pumping scenarios, the groundwater modeling estimates an increase in the Powderhorn Lake levels of 0.3-0.4 feet." To offset these increased water levels, increased pumping would be required at Powderhorn Lake.

This is concerning because, even with an attempt at adding pumps in the neighborhoods, the modeling shows that water levels will still go up for homes that are in low-lying neighborhoods from Lake Hiawatha to Powderhorn Lake in South Minneapolis. My question is how many more neighborhood pumps will need to be

installed to fix any problems created by this plan?

Regarding the neighborhood to the southwest of the the golf course:

We have not seen any plans to address potential flooding in the neighborhood directly southwest of the golf course. This area is also low and prone to water problems, and appears to have the same FEMA designation as my mom's city block. Will the pumping changes increase the likelihood of water problems in this neighborhood which includes several businesses? Plus, a developer is now proposing a 5 story building with a grocery store (floor 1), 125 space parking ramp (floor 2), and 3 floors containing 125 units (floors 3, 4, and 5) on this property, replacing a 1 story grocery store. We have been told by the owners of the current grocery store that they currently have water problems.

No functional Cone of Depression

As you and I have talked about, I do not see anything new in their plan that would create a functional cone of depression. The MPRB document, Water Management Alternatives³, page 14, states that "the Longfellow Drain would discharge to Minnehaha Creek or Lake Hiawatha." And, "the well located at the intersection of E. 43rd St. and 19th Ave. S., .. would ... discharge to the existing storm sewer along E. 43rd Street" which runs down 43rd Street and then under the golf course, ultimately discharging directly to Lake Hiawatha. This plan proposes to day-light this storm sewer at the northwest corner of the golf course property, which would put the water right back on the wetland and into Lake Hiawatha. They have not indicated that they will be pumping the water somewhere other than back to the golf course property. Their modeling showed that 46% of the water pumped in the neighborhoods will come from "seepage from Creek and Lake".

This also worries me because this indicates to me that the direction of the water movement under the homes will change. Right now the water drains from the neighborhood into the golf course. Their modeling numbers indicate that 46% of the pumped water will be drawn from the "lake" which tells me that this will change the direction of the water flow under the homes, which would actually draw water into the neighborhoods and under the homes. Does this seem correct?

Concerns about daylighting the 43rd street pipe:

If the plan will be to daylight this pipe and create a channel across the golf course, it is unclear at this time whether this channel will even work since the MPRB's Impact Assessment document² (p. 12) states that "grading plans were not developed as part of this assessment." So, it is unknown if the channel will effectively move water to Lake

Hiawatha.

Proximity of water to homes:

Once pumping stops on the golf course property, the water level on the golf course property will mimic the water level of Lake Hiawatha. This means that, across the street from the homes, the level of water in the new wetland will vary from 811 feet (low normal) to 814 feet (high normal). The study of the basements of nearby homes determined that the bottom of the basements varied from 811 feet to 814 feet.

State of Minnesota freeboard requirements would dictate that the water level under the homes should be no more than 810 feet. FEMA freeboard requirements would dictate that the water level under the homes should be no more than 808-809 feet. Both of these requirements are below the "low normal" level of Lake Hiawatha.

It is frighteningly unclear how any pumping will keep water out of the basements that will be directly across the street from a wetland that will be at or higher than the bottom of the basements. This is especially concerning since the pumping will be drawing water from the wetland, through this neighborhood, to the pumps west of these homes.

Over the past 2 years I have accumulated these concerns while reading through the MPRB documents. My engineering background says that all of these issues create the large possibility of serious water problems in the neighborhood.

My questions submitted to you in May of 2019.

Since I sent my last list of questions to you, I have been further researching the type of project that the MPRB wants to do on the Hiawatha Golf Course property. My understanding is that the MPRB project for the Hiawatha Golf Course property would be a "constructed wetland". So, I have been researching what it means to design, build and maintain a constructed wetland. The MPRB states that the main purpose of this wetland is to mitigate pollution, in particular, phosphorus. I have some concerns and questions based on EPA Guidelines for constructed wetlands.

The following are some of the most concerning issues that I found in the following booklets on the EPA site:

(1) EPA - A Handbook of Constructed Wetlands

(2) EPA Booklet - Constructed Wetlands Treatment of Municipal Wastewater

Site Selection - The following items would seem to disqualify Lake Hiawatha for use as a "constructed wetland" for the purpose of pollution mitigation, including phosphorus reduction:

- **"The site should be above the water table and not be in a floodplain."** (1) *(My concern: The golf course is in a floodplain.)*
- "The site should contain soils that can be sufficiently compacted to minimize seepage to groundwater. **Although peats are common in natural wetlands, they are not preferred soil for establishing constructed wetlands.** Peats can release organic acids, which contribute to low PH. Also, when flooded, peats have a soft, loose texture that may not provide adequate support for plants." (1) *(My concern: My understanding is that the golf course is heavy in peat.)*
- **"A large buffer zone should be placed between the wetland and neighboring property. The wetland should not be placed next to the edge of neighboring properties."** (1) *(My concern: The water will be across the street from homes; i.e., within about 30 feet. And, they will remove the large buffer zone (i.e., the dry golf course) between the homes and the lake water.)*
- "Water level management is key to maintaining wetland vegetation. Most wetland species are adapted to daily or seasonal fluctuations in water level but most wetland plants can tolerate neither extended periods of flooding nor drying of their roots." (1) *(My comment: Is this why they say not to build a constructed wetland in a flood plain? And, I don't see any plans that will control the amount of water coming into this wetland.)*
- **"The effectiveness of a constructed wetland in treating wastewater or stormwater is related to the retention time of the water in the wetland.** High volumes of water through a wetland reduce the effectiveness of the wetland." (1) *(My concern: My understanding is that Lake Hiawatha has one of the lowest water retention times (highest volumes of water through it) of any lake in the State of Minnesota.)*

Design: The following are some of my concerns about designing a wetland on the Hiawatha Golf Course property:

- "Design the wetland with the landscape, not against it. Integrate the design with the natural topography of the site." (1) p. 37 *(My concern: Drawing water into the neighborhoods via the proposed pumps goes against the topography and natural flow of the site.)*
- In my reading it appeared that large sites like this one should be designed with multiple cells with inlets and outlets between the cells to control the water levels in each cell for

maximum mitigation because "irregularities in the bottom surface can induce preferential flow paths." (2) p. 122 Also, "the number of cells depends on the topography, geology, and land availability." (1) p. 37 (*My concern: This project has no defined cells.*)

- "Constructed wetlands must be sealed to avoid possible contamination of groundwater and also to prevent groundwater from infiltrating into the wetland." (1) (*My concern: I don't see any liners in the plans for the wetland. This would seem to be a very expensive proposition for a wetland of this size. Do you have any idea how much it might cost to seal this wetland?*)
- "Physical outlet controls are necessary (manifold).(1) Inlet and outlet structures distribute the flow into the wetland, control the flow path through the wetland, and control the water depth. Multiple inlets and outlets spaced across either end of the wetland are essential to ensure uniform influent distribution into and flow through the wetlands. These structures help to prevent "dead zones" where exchange of water is poor, resulting in wastewater detention times that can be much less than the theoretical detention times. In cold climates, where extended periods of freezing weather are possible or where public exposure is an issue, a submerged inlet is necessary. In these instances, the simple perforated inlet manifold is used. Since it is not possible to adjust the level of the submerged manifolds after construction is completed, extra effort should be expended to compact and grade the inlet and outlet zones to limit subsequent settling. It may be necessary to support the manifold on concrete footings where the underlying soils are potentially unstable." (2) p. 124 (*My comment: What water level control structures need to be built to control water at the inlets, outlets and in the interior of the wetland between cells? They have had no discussions about this.*)

Ongoing Maintenance: My research into constructed wetlands has helped me to understand how complex these systems are to design and build, and how important it is to maintain them on an ongoing basis. We have found that the MPRB has been very eager to start new projects, but very lacking in maintaining the infrastructure that they have. The "constructed wetlands" at Lake Nokomis have been severely neglected. If it hadn't been for our group pushing them, the lastest maintenance on these ponds may not have occurred. So, I have concerns with the MPRB creating this "wetland" and then abandoning it. The following are some of my concerns and questions regarding maintenance.

- "For pollutants that are retained within a wetland, such as phosphorus and metals, the capacity of the wetland to remove and store the pollutants may decrease over time. If necessary, wetland sediments and litter can be removed periodically and the wetland rebuilt with fresh substrate." (1) (*My concern: This would be such a large wetland which would, likely, get saturated quickly, thus needing refreshing of the soil and plants on a regular basis?*)

- **"If evapotranspiration losses exceed water inflows , supplemental water will be required to keep the wetland wet and to avoid concentrating pollutants to toxic levels."** (1) *(My concern: I assume that the MPRB would need a plan for supplemental water to keep the wetland healthy?)*
- Monitoring - "As a minimum, lightly loaded systems that have been operating satisfactorily may only need to be checked every month and after every major storm. Those that are heavily loaded will require more frequent and detailed monitoring." (1) *(My concern: Would this system be more toward a lightly loaded system or a heavily loaded system? How often would they need to monitor this system?)*
- "Plant communities in constructed wetlands undergo significant changes following initial planting. Very few constructed wetlands maintain the species composition and density distributions envisioned by their designers." (2) p. 23 *(My concern: We have seen invasive species take over the Lake Nokomis lagoon ponds. It would seem to be very difficult to keep invasive species out of this constructed wetland at Lake Hiawatha considering the amount of water that enters it and the fact that the water drains from such an expansive area. Is it even possible to keep invasive species out of the wetland?)*
- "In cold climates, the water levels should be raised approximately 18 inches in the fall until an ice sheet develops. Once the water surface is completely frozen, the water levels can be lowered to create an insulating air pocket under the ice and snow cover to maintain higher water temperatures in the wetland." (2) p. 129 *(My concern: Is this type of maintenance even possible in a body of water like Lake Hiawatha considering the amount of water that flows through it?)*

Other information:

- **"Misconception #4 - Constructed wetlands can remove significant amounts of phosphorus.** Phosphorus removal in constructed wetlands is limited to seasonal uptake by the plants, which is not only minor compared to the phosphorus load in municipal wastewater, but is negated during the plants' senescence (condition or process of deterioration with age). New plants growing in a freshly planted wetland will uptake more phosphorus than a mature wetland, which will have phosphorus leaching from dying (senescent) plants as well as uptake by growing plants. Also, newly placed soils or media will have a greater phosphorus sorption capacity than a mature system which will have most sorption sites saturated." (2) *(My question: How often would a wetland the size of the planned one at Hiawatha need to be rebuilt to remain functional?)*

I really appreciate any information and feedback you can give me relating to my concerns and questions.

Sincerely, Kathryn Kelly

