Hiawatha Golf Course Pumping FAQ

Minneapolis Park and Recreation Board

1. Who has jurisdiction over Lake Hiawatha and Minnehaha Creek?

Any alterations such as excavation, filling, or changing water levels of the lake, the creek, or their floodplains would require permits and approvals from some or all of the following regulatory agencies: the Minnesota Department of Natural Resources (DNR), Minnehaha Creek Watershed District, the Federal Emergency Management Agency (FEMA), and the Army Corps of Engineers. The Minneapolis Park and Recreation Board and City of Minneapolis do not have jurisdiction over these matters. Obtaining the necessary permits and approvals to alter lakes, streams, wetlands, and floodplains is difficult in Minnesota. Any proposed alterations to Lake Hiawatha and/or Minnehaha Creek may be denied by one or several of the agencies with jurisdiction.

2. Where is the water coming from that is being pumped into the lake?

Approximately 17 percent of the water is stormwater runoff, 33 percent is seepage directly from Lake Hiawatha, and 50 percent is shallow groundwater.

3. What would happen if the pumps were turned off?

Without pumping, the groundwater elevation underneath the golf course would rise by 4 feet. This would result in a significant portion of the golf course being underwater and unplayable.

4. Can the lake level be lowered to reduce the amount of pumping and reduce flooding?

A lower lake level would result in a lower groundwater elevation which would reduce the amount of pumping needed to keep the golf course playable. Lowering the lake would require permits and approvals from regulatory agencies (see #1 above). In order to lower the lake level, the outlet of the lake needs to be lowered. This could be accomplished by modifying an existing weir at 28th Street and another weir at Hiawatha Avenue. It may also be necessary to dredge the creek between the two weirs. Creek dredging will also require permits from regulatory agencies. Lowering the lake will also result in lower water elevations in the creek downstream of the lake.

Additional flood storage will lower flood elevations. Flood storage is the volume of the floodplain above the normal water level of the lake. In other words, when there is a large storm and the area around Lake Hiawatha floods, that's flood storage. The bigger the area and deeper the flood water, the more flood storage there is. A lower lake level will provide more flood storage and may lower flood elevations. This has not been studied so the magnitude of the change is unknown. The results of other Lake Hiawatha studies indicate there would be a minimal reduction in flood elevations.

5. Why not just dredge Minnehaha Creek?

Dredging Minnehaha Creek will not solve stormwater and ground water issues at the Hiawatha Golf Course for the following reasons:

1. Constructability: There are several utility crossings within the Minnehaha Creek corridor that limit how much the creek could be lowered, most notably a Metropolitan Council Environmental Services (MCES) 11-foot diameter gravity sanitary sewer pipe. As a result, the most the creek could be excavated and still maintain cover over this pipe is approximately 1.0 foot. The pipe would still need some level of reinforcement/ stabilization over the pipe. There are also several bridges/crossing downstream of Lake Hiawatha that would likely need to be modified or reconstructed to achieve the lower channel elevation. Additionally, the creek channel would need to be redesigned, restored to achieve a stable channel and banks, and from an ecological standpoint will take significant time to reestablishing the existing biological communities.

2. Property protection: Under existing conditions, the impacts of lowering Minnehaha Creek by 1-foot, resulting in a 1-foot drop in average water level of Lake Hiawatha, are not enough to resolve the water problems at the golf course, because it reduces the average total annual groundwater pumping required by approximately 22 million gallons per year (MGY). This means, approximately 220 MGY of groundwater pumping is still required to protect homes and maintain golf course. Additionally, lowering the creek/Lake Hiawatha only has slight impacts on the current flooding in the watershed north of the Hiawatha Golf Course.

3. Regulation: Environmental permitting would be required to lower Minnehaha Creek by 1-foot, approximately 2,000 feet downstream of Lake Hiawatha from numerous federal, state, and local entities. Permits required, include but are not limited to, U.S. Army Corps of Engineers (Section 10/Section 404 Permit), MnDNR Permits (General/ Individual Public Waters Work Permit and Environmental Assessment Worksheet), MPCA (401 Water Quality Certification, Construction Stormwater Permit, Dredging Permit), and Minnehaha Creek Watershed District (Dredging Permit, Erosion Control, Floodplain Alteration Permit, Shoreline and Streambank Stabilization Permit, Waterbody Crossing & Structures Permit).

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6. Would dredging Lake Hiawatha reduce the amount of pumping?

Dredging the lake makes it deeper but doesn't lower the level of the lake so it will not reduce pumping.

7. How was pumping identified as an issue?

The golf course has undergone many changes over the years. Holes have been redesigned and reconstructed. Ponds have been redesigned and dredged. New ponds have been and added and drainage has been improved. Construction plans for some of these golf course modifications have been found and they indicate pumps were present back in the 1960s, and maybe sooner. In 1999 the pumps were replaced and upgraded. These are the same pumps in place today.

Recently, the City completed a study at the Hiawatha Golf Course to answer some stormwater questions related to a large storm event and subsequent flooding in July 2013. The study looked at the capacity of the golf course pumps to pump stormwater. During the course of the study, it was realized that the pumps were pumping both stormwater and a large amount of groundwater. While pumping has been happening at the golf course for many years, it wasn't until recently that the volume of groundwater pumping was determined.

8. Is there any evidence that the lake is higher than it used to be thereby making the golf course water issues worse?

The level of Lake Hiawatha is controlled by a high point in Minnehaha Creek downstream of the lake. This control point may have changed over time. The control point could be a downstream weir in the creek, a downstream bridge, culvert, or utility crossing or simply a downstream high point in the creek channel bottom. Since the golf course was built in the early 1930s, there have been many new creek crossings and at least one weir added at 28th Street. There may have also been modifications to the weir on the upstream side of Hiawatha Avenue during one of many road and LRT projects at this location. Accurate historical data is difficult to obtain. We do not have enough information to conclusively say whether or not the control point of the lake has been changed over time. We do know that if the lake is higher than it used to be, then groundwater is higher and more pumping is required to keep the golf course dry.

The land use upstream of Lake Hiawatha has changed significantly in the last eight decades. About 176 square miles drain to Lake Hiawatha. This was nearly all forests, meadows, wetlands and agricultural land when the golf course was built. It is now fully developed. Wetlands have been filled. Pipes and drains have been installed to quickly drain the land. Roads, roofs, and parking lots shed nearly all the rain that falls on them as opposed to open space where rain infiltrates into the ground. All these changes to the watershed have resulted in significantly more runoff to Minnehaha Creek and Lake Hiawatha, causing the water elevations to rise more frequently, to higher elevations, and for longer periods of time.

9. Could the golf course be sinking thereby making the golf course water issues worse?

We know that Lake Hiawatha was dredged in the late 1920s and the dredged material was used as fill to build the golf course on. Bottom sediments in shallow lakes, which Lake Hiawatha was before dredging, tend to be high in silts and organic material. Soil borings confirm the golf course was constructed on loose bottom sediments. It is not uncommon for these soils to settle and compress over time. Observations by golf course personnel indicate this is happening.

There is no known survey data to quantify the actual amount of settlement but golf course staff say some parts of the course have settled a foot or more.

10. How much groundwater is being pumped into Lake Hiawatha?

Approximately 242 million gallons of groundwater is pumped into Lake Hiawatha from the golf course on an annual basis. This includes groundwater and lake seepage. When comparing the volume of pumped groundwater to the volume of water entering the lake from Minnehaha Creek, the pumped groundwater accounts for approximately 1 percent of the total volume.

11. Is there a water quality impact on Lake Hiawatha from the pumped water?

The water quality of Minnehaha Creek has a significantly larger impact on the water quality of Lake Hiawatha than the pumped water. Testing has demonstrated that levels of nutrients such as phosphorus were similar in the pumped groundwater and the 5 year average phosphorus concentration in Lake Hiawatha. In addition, the total load of phosphorus from the pumped water is less than 2.5% of the annual load of phosphorus to the lake.

The water in the golf course's pond system is part of a

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stormwater management system for the Lake Hiawatha subwatershed. Water from residential properties, businesses and streets in the subwatershed drain into Lake Hiawatha through the stormwater system. The ponds help filter phosphorus, nitrogen and sediment levels before entering Lake Hiawatha.

12. What is the impact of pesticides used at the Hiawatha Golf Course on Lake Hiawatha's water quality?

Our water quality testing does not monitor the amount or impact of pesticides from the golf course. While the MPRB does record the amount of pesticides used at Hiawatha Golf Course, we are not measuring the amount of pesticides in Lake Hiawatha. There are numerous potential sources of pesticides to the lake - the golf course, residential use, pesticides from the atmosphere and other potential inputs along the more than 176 square miles that drain into Lake Hiawatha.

13. What is being done to address trash in Lake Hiawatha?

Trash ends up in Lake Hiawatha from a variety of sources, including litter from nearby streets, the park, storm drains and from Minnehaha Creek. The MPRB and the City of Minneapolis are looking at ways to reduce trash inputs into the lake by raising awareness of local streets and storm drains as a source of trash. Any land use or infrastructure changes at the golf course will include consideration of ways to minimize trash in the lake. The City recommends that people be vigilant in picking up litter. Good ways to get involved include participating in the City of Minneapolis' Adopt-A-Drain and Adopt-A-Litter Container programs.

14. Is pumping depleting the deep groundwater supply used for drinking water?

No. Pumping tests show there is no connection between shallow groundwater at Hiawatha and the deep regional drinking water aquifer (the Prairie du Chien-Jordan aquifer).

15. Can the elevation of the golf course be raised to eliminate the need for pumping?

Almost the entire golf course is within the FEMA 100-year flood plain. Filling the low areas of the golf course to raise tees, fairways, and greens would reduce the need for pumping groundwater. Pumping stormwater would still be required. However, raising the golf course will fill the floodplain which will reduce the flood storage which could raise flood elevations around the lake and upstream of the lake. This could increase the chances of roads, buildings, and houses flooding. Filling the low areas will also likely impact existing wetlands. Placing fill in the floodplain and impacting wetlands requires permits and approvals from several regulatory agencies.

16. Does the park board have permission to pump this water?

The Park Board has a permit to pump water at this location; however the volume of water was underestimated. The DNR, the agency that permits groundwater appropriations, is aware of this and is working with the Park Board.

17. Is Hiawatha Golf Course profitable?

The average rounds played at the Hiawatha Golf Course per year in 1997-2016 is 40,800. However, in the last six years impacted by flooding, wet conditions, and market changes, the average was 23,800 rounds per year. The average annual net revenue that same period is $120,000. The average net revenue for the golf course for the period prior to wet and flooded conditions (1997 - 2010) was $250,000 per year, while the average net revenue for the six (6) years impacted by the wet conditions was a loss of $180,000 per year.

18. What is the Minnesota Department of Natural Resources (MnDNR) role on this project?

The MnDNR is the regulatory agency responsible for assessing and approving pumping requests. The MPRB consulted the MnDNR because of the magnitude of pumping at the Hiawatha Golf Course, which was more than the existing permitted pumping rates. At that time, the MnDNR instructed the MPRB to continue pumping until they had a full understanding of the situation and pumping required to support options for the golf course area. Once the MPRB settles of the path forward, a formal application would have to be submitted to the MnDNR for consideration. The MnDNR has information about the two alternatives under consideration: A. maintain current pumping rate of 242 million gallons per year, and B. reduce pumping to 94 million gallons per year) and have indicated a preference for the reduced pumping alternative.