

Central Region Headquarters
1200 Warner Road
Saint Paul, MN 55106

August 17, 2022

Re: Board of Zoning Appeals (BZA) Public Hearing on Pigs Eye Lake Habitat Restoration Project

Dear Members of the Board of Zoning Appeals:

I understand that the Board of Zoning Appeals, upon conclusion of the public hearing on August 8, 2022, asked City of Saint Paul staff to obtain additional information from the DNR. In an email sent August 11, 2022, DNR received three questions regarding the ordinary high water level (OHWL) of Pigs Eye Lake, Public Water #62-4P.

Ordinary High Water Level of Public Waters

The DNR has broad statutory authority to determine the OHWL of waters of the state ([Minn. Stat. § 103G.255 \(3\)](#)). [Minn. Stat. § 103G.005, Subd. 14](#) defines Ordinary High Water Level (OHWL) as the boundary of water basins, watercourses, public waters, and public waters wetlands. The OHWL is the landward extent of DNR jurisdiction over work in the bed of public waters. It is commonly used by DNR in Public Waters Work Permits and by local land use zoning authorities to determine lot size and structure setbacks. The OHWL is not a runout elevation, which is the elevation at which water leaves a water body. The OHWL is not an average water level. The average water level includes a wide range of water levels that contribute to the average and does not lend itself to long-term reliability. The OHWL is not an extreme high water level or an arbitrary elevation set by an individual, group, or agency.

Question 1. What is DNR's specific classification for Pigs Eye Lake for determining its OHWL? Minn. Stat. Sec. 103G.005, Subd. 14 lists 3 ways the OHWL is determined: Which of the methods was used for Pigs Eye Lake?

Pigs Eye Lake is a public water basin located within the floodplain of the Mississippi River. Pigs Eye Lake is directly connected to the Mississippi River via channels at the Red Rock Barge Terminal and at Hog Lake. Due to these hydraulic connections, the water level of Pigs Eye Lake directly fluctuates with the water level of the Mississippi River. The ordinary high water level of Pigs Eye Lake has therefore been determined to be the same as the ordinary high water level of the Mississippi River.

In accordance with the definition in [Minn. Stat. § 103G.005, Subd. 14](#), the ordinary high water level of the Mississippi River is the elevation of the top of the bank of the channel. Due to dredging, levee construction, riprap, and other river-altering activity, physical evidence of the top of the bank is very limited in the commercially navigable portion of the Mississippi River. Therefore, since 2005 the DNR has used top of bank elevations determined through hydrologic/hydraulic modeling of the 2-year return interval, or 50% annual exceedance flow, because this flow, known as the bankfull flow, has been demonstrated through scientific

studies to be closely associated with river channel formation. DNR's determination is based on the best available information. DNR has consistently used these OHWL determinations for DNR Public Waters Work Permitting on the Mississippi River for nearly 20 years.

Please note that the navigation lock and dams constructed on the Mississippi River, including Lock and Dam No. 1 in St. Paul and Lock and Dam No. 2 in Hastings, are not akin to flood control dams. A flood control dam is a solid structure designed to store extra water in a reservoir during a flood event while lowering water elevations downstream. Examples of flood control dams in Minnesota that create a reservoir include the Leech Lake Dam, Pokegama Lake Dam, and the Sandy Lake Dam. In the case of flood control dams, the OHWL is the highest normal summer pool operating elevation as described within the operating plan of the reservoir. The OHWL of a reservoir is not the highest operating level of a flood control dam because that level would correspond to a flood event, or **extreme high** water level, and not an **ordinary high** water level. Accordingly, the OHWL of a reservoir is defined as the highest normal summer pool operating elevation.

As opposed to flood control dams, the navigation dams on the commercially navigable portion of the Mississippi River, including Lock and Dam No. 2, do not provide any flood control function and do not store extra water in a reservoir. These navigation dams are designed and operated solely to maintain the **minimum water level** necessary for commercial navigation (barges and tows) in the 9-foot-deep navigation channel. Unlike a solid flood control dam, Lock and Dam No. 2 consists of a series of piers across the river with moveable gates between the piers. The gates at Lock and Dam No. 2 are operated during low (i.e., drought) and moderate flows to maintain water levels at the elevation required for navigation. During periods of high flow, the gates are raised completely out of the water allowing the river to flow freely.

The **minimum water level** maintained by Lock and Dam No. 2 at the Primary Control Point at South St. Paul between Lock and Dam No. 1 and Lock and Dam No. 2 is 686.8 feet in the NAVD88 vertical datum or 687.2 feet in the MSL 1912 vertical datum. The minimum water level maintained by Lock and Dam No. 2 at the dam is 686.1 feet in NAVD88. The U.S. Army Corps of Engineers defines these **minimum water levels** as the "project pool elevation."

The assertion that the "project pool elevation" of Lock and Dam No. 2 (686.8 feet, NAVD88 datum) is equivalent to the ordinary high water level of Pigs Eye Lake is **incorrect**. As explained above, the project pool elevation represents the **low** water level of Pigs Eye Lake. The ordinary high water level of any public water must be a **high** water level. It would be unreasonable to conclude that the **low** water level of Pigs Eye Lake is its ordinary **high** water level.

Question 2. What is the OHWL elevation for Pigs Eye Lake as determined specifically by the DNR, how did the DNR reach that determination and when was the determination made?

The OHWL of Pigs Eye Lake, due to the lake's direct hydraulic connection to the Mississippi River, is equivalent to the OHWL of the Mississippi River at Pigs Eye Lake, which is located at River Mile 834. The OHWL of the river at River Mile 834, and therefore the OHWL of Pigs Eye Lake, is 692.9 feet, NAVD88 datum.

In 1983, the Minnesota DNR and the U.S. Army Corps of Engineers entered into a Memorandum of Understanding (MOU) in which the Corps agreed to apply for state permits and coordinate on certain activities in the Corps' channel maintenance program for the federally-managed commercially navigable portion of the

Mississippi River. The original 1983 version of this MOU contained state permit elevations that were determined by the U.S. Army Corps of Engineers. Between Lock and Dam No. 2 in Hastings and Lock and Dam No. 1 in St. Paul, these permit elevations ranged from 687.2 feet to 695.4 feet (MSL 1912 datum).

In 1994, DNR began a multi-year effort to carefully re-evaluate the permit elevations in the MOU to meet Minnesota's statutory definition of the OHWL. The effort included evaluation of the navigation lock and dam system, hydrologic/hydraulic modeling, and field verification. In 2005, the DNR's primary Public Waters Work Permit governing the Corp's channel maintenance activities was amended to include the DNR-determined OHWL elevations. This permit and associated MOU must be reviewed and extended every 5 years in accordance with [Minn. Stat. § 103G.315, Subd. 13](#).

Since 2005, DNR has used these DNR-determined OHWLs for permitting all projects in the commercially navigable portion of the Mississippi River, including, for example, a 2008 permit authorization for several improvements below the OHWL at Harriet Island Park in St. Paul, and a 2015 permit authorization for installation of a new hopper barge mooring cell at CHS, Inc.'s facility located immediately east of the Lafayette Bridge in downtown St. Paul.

Question 3. How often is the OHWL reviewed/reestablished and are there criterion used to evaluate whether an established OHWL must be reviewed, adjusted or redetermined?

Re-examination of prior ordinary high water level determinations are completed by DNR on an as-needed basis when and where there is substantial supporting evidence to justify re-examination. At this time, DNR sees no reason for re-examination of the ordinary high water levels used on the Mississippi River, including at Pigs Eye Lake.

Conclusion

The OHWL of Pigs Eye Lake is 692.9 feet, NAVD88 vertical datum. This elevation is DNR's jurisdictional boundary for the basin. The ongoing habitat restoration project in Pigs Eye Lake is authorized by DNR Public Waters Work Permit #2020-1818 and consists of fill placed entirely below the ordinary high water level. The filling has been authorized by DNR for fish and wildlife habitat purposes only; these islands are not authorized for the purposes of creating upland for development subject to local land use regulations.

Sincerely,



Dan Scollan
East Metro Area Hydrologist