

Round Lake Water Level Facts
Prepared For
Round Lake Property Owners Association
General Membership Meeting – October 16, 2010

• Author's Note •

The management of the water level in the Round Lake Watershed (including Round Lake, Little Round Lake, Osprey Lake and Osprey Creek) is a rather complex issue. As such, it has been a topic of much debate over the history of the lake. I have tried to present only the facts as I have learned them since joining the Board to address the water level management issue in June, 2010. The information in this document is a compilation of facts taken primarily from three reports:

- *Round Lake Management Plan – March, 2008. Published by Sawyer County as a product of the Round Lake Task Force.*
- *Hydraulic Controls Analysis – March, 2007. Published by Short Elliott Hendrickson Inc. (SEH).*
- *Hydraulic Design Feasibility Analysis – November, 2007. Published by Short Elliott Hendrickson Inc. (SEH).*

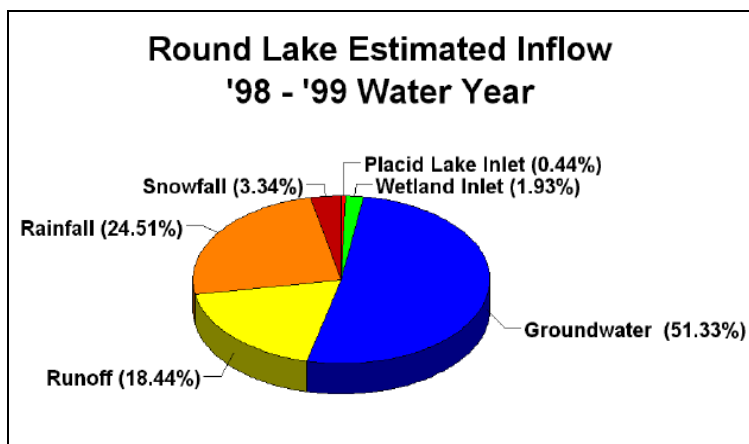
As I continue to study this topic, I will update and amend this document as appropriate. A current version will be available at the RLPOA website:

www.roundthelake.com

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FROM WHERE DOES THE LAKE GET ITS WATER?

Round Lake is a "seepage lake" with no natural tributaries flowing into it. In a "typical" year, the inflow of water is broken down as follows:



HOW DOES WATER LEAVE THE LAKE?

Water leaves the lake in three ways:

- **Evaporation.** During the summer months, the lake level can drop up to ¼ inch per day due to evaporation. The estimated annual evaporation is 23 inches.
- **Groundwater Seepage.** Just as groundwater flows into the lake, it also flows out. Groundwater inflow is slightly greater than groundwater outflow as a result of the creation of the Tiger Cat Flowage in 1937.
- **Outflow Through the Carlson Road Dam.** When the water level is above the height of the sill of the dam (1343.7'), there is outflow through the dam.

WHAT IS THE "NORMAL" WATER LEVEL OF ROUND LAKE?

In 1941, the Public Service Commission of Wisconsin (predecessor to the DNR) issued a "Finding and Order" in response to Sawyer County's application requesting it to determine the normal water levels of Round and Little Round lakes. It established the normal level of Round Lake to be 77.0' local datum (based on a staff gauge located at Kiefer's Resort at the time). The maximum level for the lake was specified to be 77.25'. This document also ordered Sawyer County to construct a system consisting of a man-made channel between Little Round Lake and Osprey Lake and a dam and control gates to maintain the lake level at 77.0' *when a sufficient water supply exists* (no minimum level can be established). This order is still in force today.

A WORD ABOUT THE LOCAL DATUM

When the 1941 order was written, it was common practice to measure relative to a local datum, such as the staff gauge at Kiefer's Resort.

Today, however, modern GPS survey instruments are designed to measure relative to a national standard called The National American Vertical Datum of 1988 (NAVD 88) related to mean sea level. To ensure consistency and accuracy, it is preferable to use this modern datum.

Short Elliott Hendrickson Inc. (SEH) developed the following conversion from the local datum to NAVD 88:

$$\text{NAVD 88} = \text{Local Datum} + 1267.75'$$

Therefore, in NAVD 88 terms, the "normal" lake level as specified by the 1941 order is 1344.75' and the maximum is 1345.00'.

HOW HIGH AND LOW HAS THE WATER HISTORICALLY BEEN?

Recordkeeping over the years has been sporadic. It seems that, most generally, the level of the lake has been recorded during times of high or low water and has not been recorded when it is near the "normal" level established by the 1941 order.

The highest level recorded since the dam was built was 1345.94' in July, 1967 (14 ¼" above normal). The lowest level recorded since the dam was built was 1343.62' in November, 1976 (13 ½" below normal).

WHAT IS THE WATER LEVEL TODAY?

The water level was measured on October 15, 2010 to be _____.

HOW IS THE DAM INTENDED TO OPERATE?

Because Osprey Lake is dependent on flow from Round and Little Round Lake, state law requires that a "base flow" be allowed to pass through the dam when the water level is above the sill level – 1343.7'. When water is above the sill but below the maximum allowable level, stop logs can be added or removed to allow "base flow" while retaining water to the extent possible.

Once the lake level exceeds the maximum allowable of 1345.0', all stop logs are removed to allow maximum flow until the lake level falls back below the 1345.0' level. With all stop logs removed, the system should allow water to flow freely through the dam, down the channel to Osprey Lake, out from Osprey Lake into Osprey Creek, through the culvers at NN and on to Lac Courte Oreilles.

HOW MUCH "CONTROL" DOES THE DAM PROVIDE?

The ability of the dam to control the lake level is minimal, certainly much less than desirable. It is most critical as a high water control, to prevent the damaging effects of erosion and flooding. When water levels are just above the maximum allowable at 1345.0' and all stop logs are removed to maximize outflow, the lake will only drop about 1/8" per day. Even at a water level of 1345.5', 6" above the maximum, the daily outflow will lower the lake less than 1/4". Therefore, it is easy to see how in a period of heavy and frequent rainfall, the lake level can continue to rise, even though the dam is opened to allow maximum flow.

IS THE SYSTEM OPERATING AS DESIGNED?

No. Over the years since the dam was built, man and nature have had negative impacts on the capabilities of the system, particularly as a high water control. In order for the system to operate as intended, once water level is above the sill of the Carlson Road Dam, it must flow freely through the system all the way to Lac Courte Oreilles. The following three issues prevent free flow:

- The channel between Little Round Lake and Osprey Lake has collected sediment to the point that its high point is 1344.05', more than 4 inches above the sill level of the dam. It therefore restricts flow.
- Beaver dams in Osprey Creek below Osprey Lake were measured to have a low point of 1344.8', just a couple of inches below the maximum allowable level of Round Lake, representing a significant restriction to outflow.
- The culverts at NN were replaced in 1999 at a level of 1342.3', about 15" above the streambed. In periods of very high water, they become a restriction to outflow.

Control Structure Elevations

Stop Logs Out at the Dam

