

Time line of rain/flood events

End of May – 2 inches of rain over approximately 30 hours results in a 3ft rise in lake water level (peak 3 days after rain).

Hayward records 1.7 inches over the same time frame

June 14 – 3 1/4 inches of rain within 4 hours results in no appreciable change in water level.

Hayward records 2.16 inches of rain

June 19-20 1 3/4 inches of rain over 24 hours results in approximately 2 1/2 ft rise in lake water level.

Hayward records 2.17 inches of rain in the same period

Duluth receives nearly 10 inches of rain.

Possible explanations -

Rainfall measurement were no indicative of what the average rainfall was for the whole watershed?

Ground was still fully saturated on the 19th so more water made it into the stream

Nelson Lake released a lot more water on the 19th than they did on the 14th.

Note: I don't believe the downfalls in the river were the primary cause of the flooding. 4Ft at the 53 bridge would be similar volume as 2 ft at the bending branches location, 150ft cross-section compared to 300ft. 3 ft of higher water at the Gilmore lake outlet would lift lake levels about 2 1/2 ft because there is only about 6 inches of drop from the lake to the river.

Solutions:

- Nelson Lake flow control**
- Coffer dam – 1986 Cof E report**
- clear deadwood**

What is the issue? Minor inconvenience or nutrient load (ewm&algae)

