

5. Golden Lake

Golden Lake located within the City of Circle Pines and has a surface area of 57 acres. The lake outlet consists of a weir at an unknown elevation. The ordinary high water level is not recorded by the Minnesota DNR. Golden Lake was not addressed in the 1981 Lino Lakes FIS. The DNR Lake Finder website provided lake level data for a spotty period of record from 1989-2018 (see **Figure 5a**). The maximum annual series, consisting of 30 years, was plotted on probability paper. A polynomial line was fit to the data to determine the elevations for the various recurrence intervals (see **Figure 5b**). The estimated flood elevations are shown in **Table 5a**. The 100-year flood elevation was estimated using the polynomial equation. Insufficient lake level data and information on potential overflow elevations are available to provide a reliable estimate of the 500-year flood elevation.

Table 5a: Estimated Flood Elevations for Golden Lake

Return Period	Lake Level Data Source		
	1981 FIS	DNR (used in this study) (n = 30)	
	(NGVD 29)	(NGVD 29)	(NAVD 88)*
2	--	888.5	888.6
5	--	888.7	888.8
10	--	888.8	889.0
50	--	889.2	889.3
100	--	889.4	889.6
500	--	--	--

*0.15 feet is added to NGVD 29 datum to convert to NAVD 88 datum

An additional component of this study consists of creating a non-exceedance frequency graph based on all daily measurements available (see **Figure 5c**). For Golden Lake, the period of record consists of the data found on the MnDNR Lake Finder website, which consists of 841 days of measurements, from 1989 to 2018 (see **Figure 5a**). The results are presented in **Table 5b**.

Table 5b: Daily Non-Exceedance Frequency of Lake Levels for Golden Lake

Non-Exceedance Frequency	Lake Level	
	(NGVD 1929)	(NAVD 1988)
2.5%	887.5	887.7
10%	887.9	888.0
25%	888.1	888.2
50%	888.1	888.3
75%	888.2	888.4
90%	888.4	888.6
99.5%	888.7	888.9

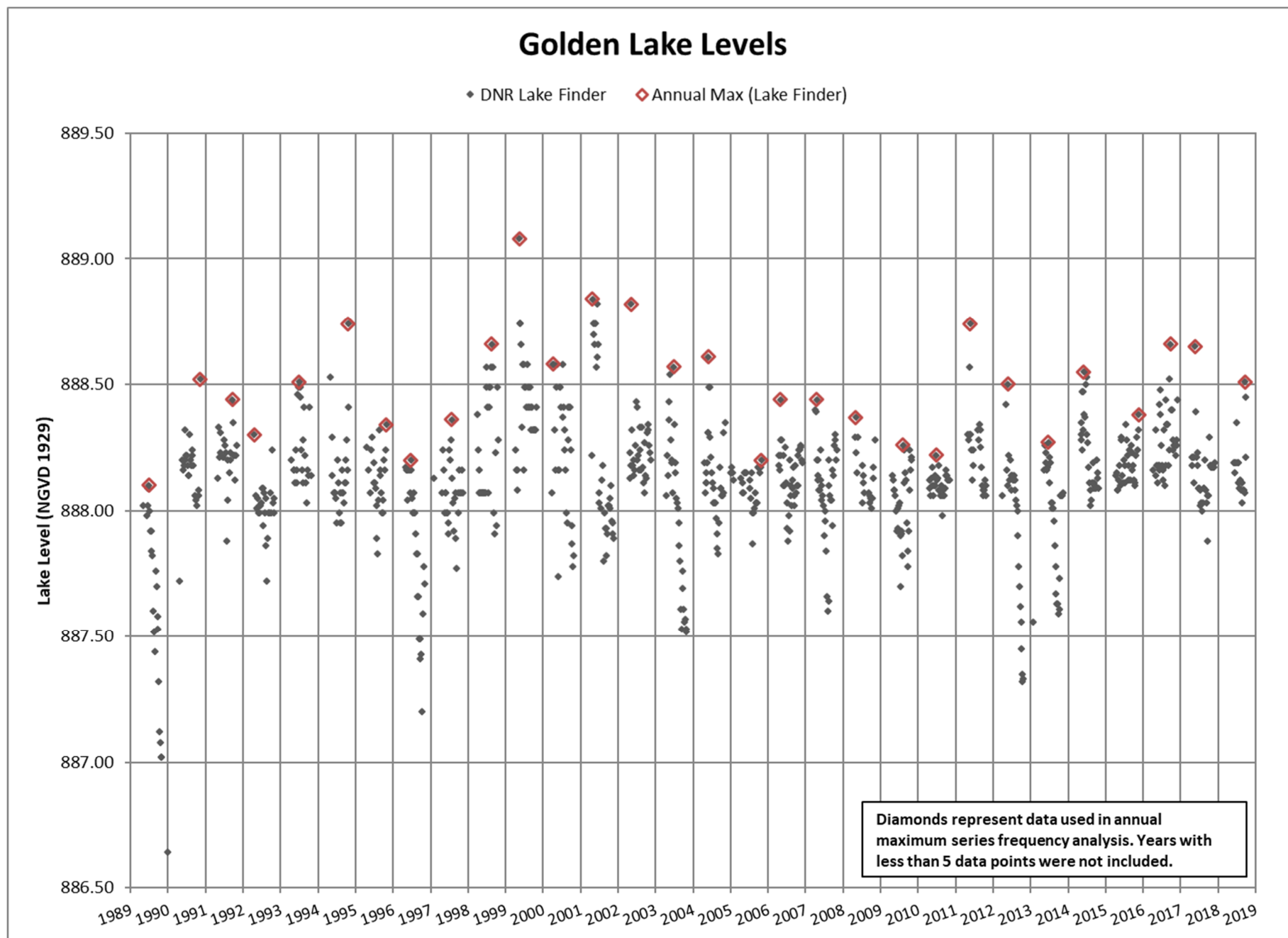
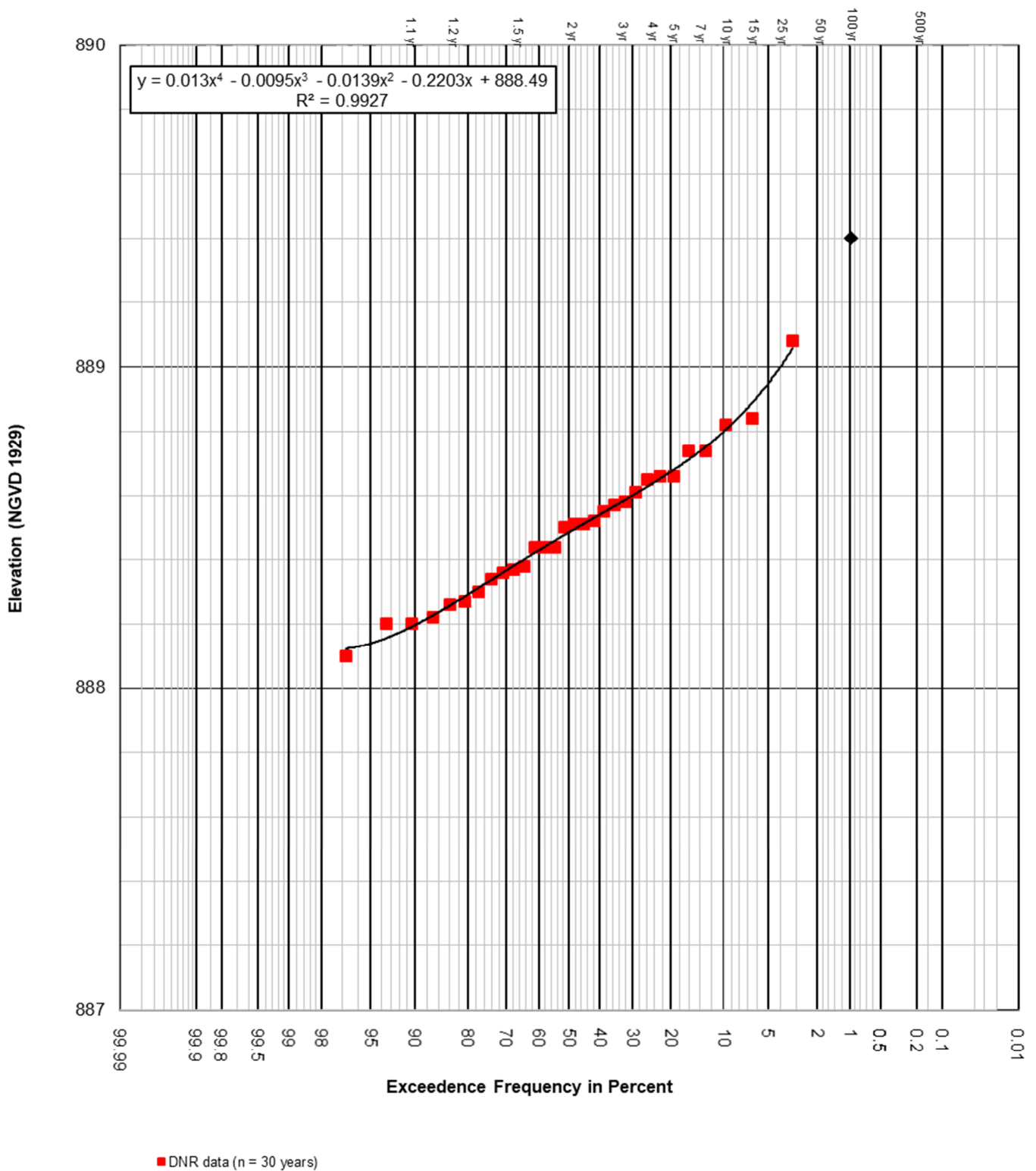


Figure 5a

Golden Lake Levels (NGVD 1929) **Maximum Annual Series Frequency Curve** **(Weibull Plotting Positions)**



Outlet:
 unknown weir

Figure 5b

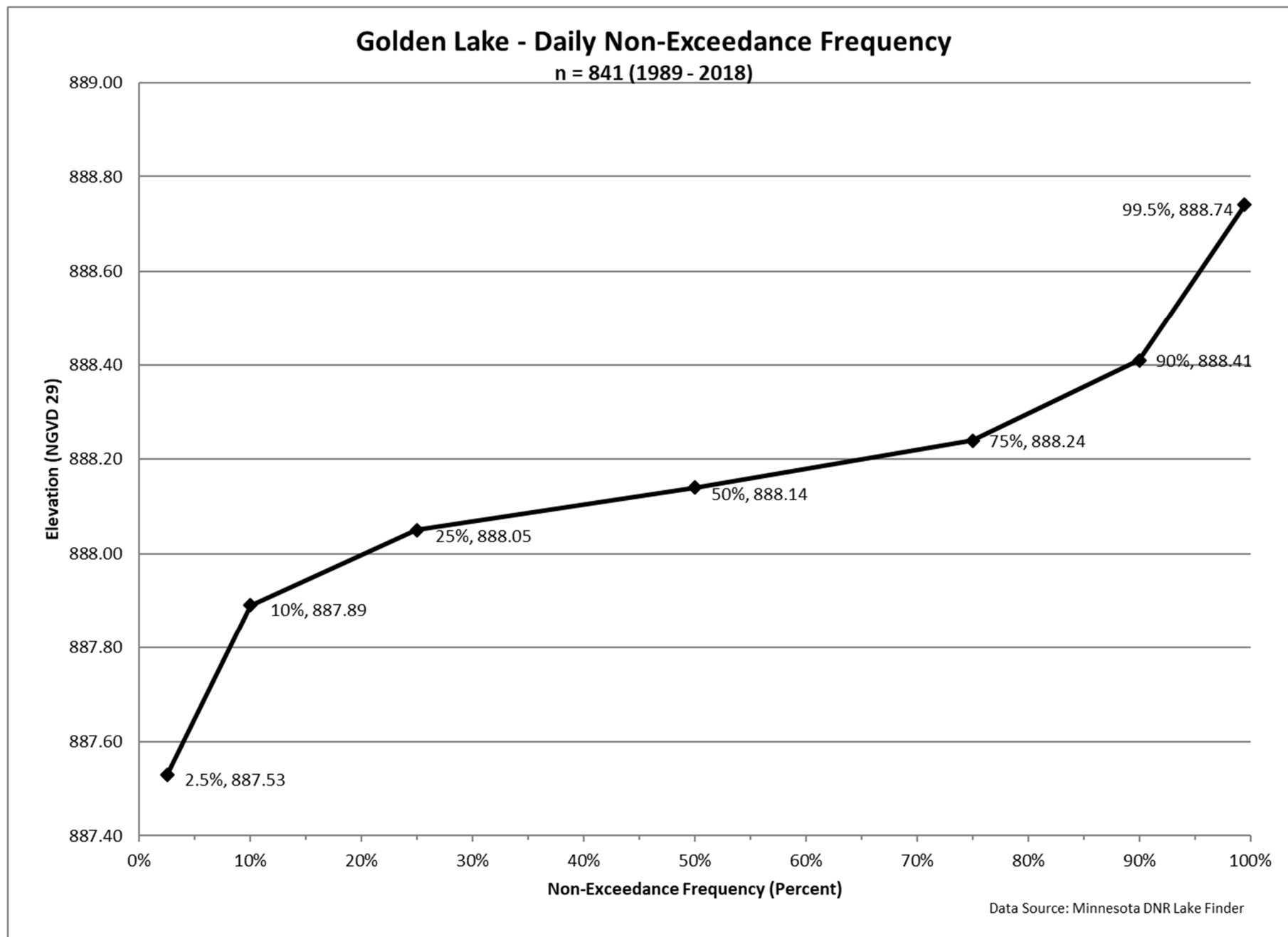


Figure 5c