

Procedures and Schedules for Controlling the Water Level in Lake Massapoag Amended April 2000

(As Approved by the Sharon Conservation Commission DEP #SE-280-254)

Authority

The authority of this procedure and schedule derives from the Lake Level Policy adopted in September 1991 (as amended).

Management Policy

The policy of this procedure and schedule for controlling the water level of Lake Massapoag is:

- 1) to maintain the water level of the lake at or as close to a staff gauge reading of 10.5 beginning May 15th and lasting through the months of July, August and September, and
- 2) beginning on the first day of October to gradually adjust the lake level to a staff gauge reading between 9.5 and 9.8 by November 1 and maintain that range whenever possible through the last day of February, and
- 3) beginning on the first day of March and lasting through April 1st, gradually raise the lake level to a staff gauge reading between 10.0 and 10.2, and
- 4) beginning April 16th, gradually raise the lake level to a maximum staff gauge reading of 10.5 by May 15th.

The staff gauge is located at the flume house at the intersection of Pond and East Streets. This is the only controllable surface water outlet for Lake Massapoag.

Definitions

Lake level. The level of the water as read on the staff gauge below the flume house at the outlet to Massapoag Brook. A measurement of 11.0 on the staff gauge equals 252.56 Mean Sea. Level (MSL).

Discharge Rate. The amount of water released from the Lake into Massapoag Brook measured in cubic feet per second (cfs). Actual Discharge Rates are measured on the staff gauge installed by the U.S.G.S. at the Quincy Street sluiceway. Discharge ratings are contained in the July 22, 1998 report from U.S.G.S.

Minimum Discharge. The lowest permitted discharge rate at each given time. This rate is derived from U.S. Fish and Wildlife Guidelines for New England Waters. The minimum discharge rate should be 1.5 cubic feet per second whenever possible. During the months of November through April a discharge rate of at least 3.0 cfs to 4.5 cfs is desirable. These discharge rates are recommended to maintain the biological integrity of the downstream streams and ponds. In no case shall the Discharge Rate be less than 1.0 cfs without explicit permission from the Conservation Commission.

Maximum Discharge. The highest permitted discharge, rate at each given time. The Maximum Discharge Rate for any month during the year is 20 cubic feet per second.

Maximum Level. The Lake Level which should not be exceeded under any circumstances at each given time. The maximum water level beginning May 15th and lasting through the end of the month of September is a reading of 10.5 on the staff gauge. The maximum water level for the month of October is 10.0. From the first day of November through February the maximum lake level is a reading of 9.8 on the staff gauge. The maximum water level from March 1 to April 15 is a reading of 10.2 and from April 16th the maximum level will increase linearly from 10.2 to a maximum level of 10.5 on May 15.

General Technique

The basic goal is: Always maintain the Minimum Discharge and never exceed the Maximum Level while avoiding sudden changes in the level of the Lake. It shall be the responsibility of the Conservation Administrator of the Town of Sharon to manage and adjust the gate within the flume house. The Conservation Administrator has discretion within the parameters of this management schedule to consider precipitation, lake water temperature, ambient air temperatures and downstream water flows in determining the appropriate discharge rates.

Many situations may occur throughout the year that may require close monitoring by the Conservation Administrator. These situations are impossible to predict but may include, but are not limited to, the following:

- 1) The lake water level is close to the maximum level and two days of heavy rain are forecasted. The Administrator may elect to lower the gate to prevent the lake level from exceeding the maximum level for that month.
- 2) The lake water level is well below the maximum level for that month. Heavy rain is forecasted. The Administrator may elect to raise the gate and cut flow in order to catch and hold the predicted rain.
- 3) The ambient air temperature is above 90 degrees Fahrenheit and no rain is forecast within the next 3 to 5 days. The Administrator may elect to reduce flows overnight and increase flows during daylight hours.
- 4) The flume house channel and/or beachfront have become clogged with debris. The Administrator may elect to lower the gate in order to clear the debris by increased water flow action.

The gate structure shall be adjusted such that no less than the Minimum Discharge at each given time is maintained, whenever possible.

There are many other conditions or combinations of conditions. The above situations are just some examples. In the case of any abnormal or unique event, the Conservation Administrator shall notify the following committees/persons:

- The Department of Public Works Superintendent
- The Conservation Commission
- The Town Administrator/Board of Selectmen
- The Lake Management Committee

The Conservation Administrator is authorized to request and receive any information or concurrence he or she deems necessary to fulfill the Lake Level Policy or this Management Schedule.

Maximum* and Minimum* Discharge Rates/Maximum* Levels
for Controlling the Water Level in Lake Massapoag
April 1995

First day of:	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<u>(CFS) as measured at the Staff Gauge</u>												
Max. Discharge	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Min. Discharge	1.5	3.0 - 4.5	3.0 - 4.5	3.0 - 4.5	3.0 - 4.5	3.0 - 4.5	4.5	1.5	1.5	1.5	1.5	1.5

<u>Lake Level as measured on the Staff Gauge</u>												
Max. Level	10.0	9.8	9.8	9.8	9.8	10.2	10.2	10.5	10.5	10.5	10.5	10.5

* For the purposes of this management plan all Minimum Discharge rates are to be maintained whenever possible. All Maximum Discharge rates are absolute. If a maximum discharge rate may be exceeded, the Conservation Agent and/or the Superintendent of Public Works should notify the Town of Canton and monitor conditions on all downstream streams and ponds within the town of Sharon.

* All Maximum Lake Levels are absolute.

UPDATE added April 2022:

Conversion of Staff Gauge level readings in Massapoag Brook below Massapoag Lake at Sharon to CFS - see Graph on p. 6.

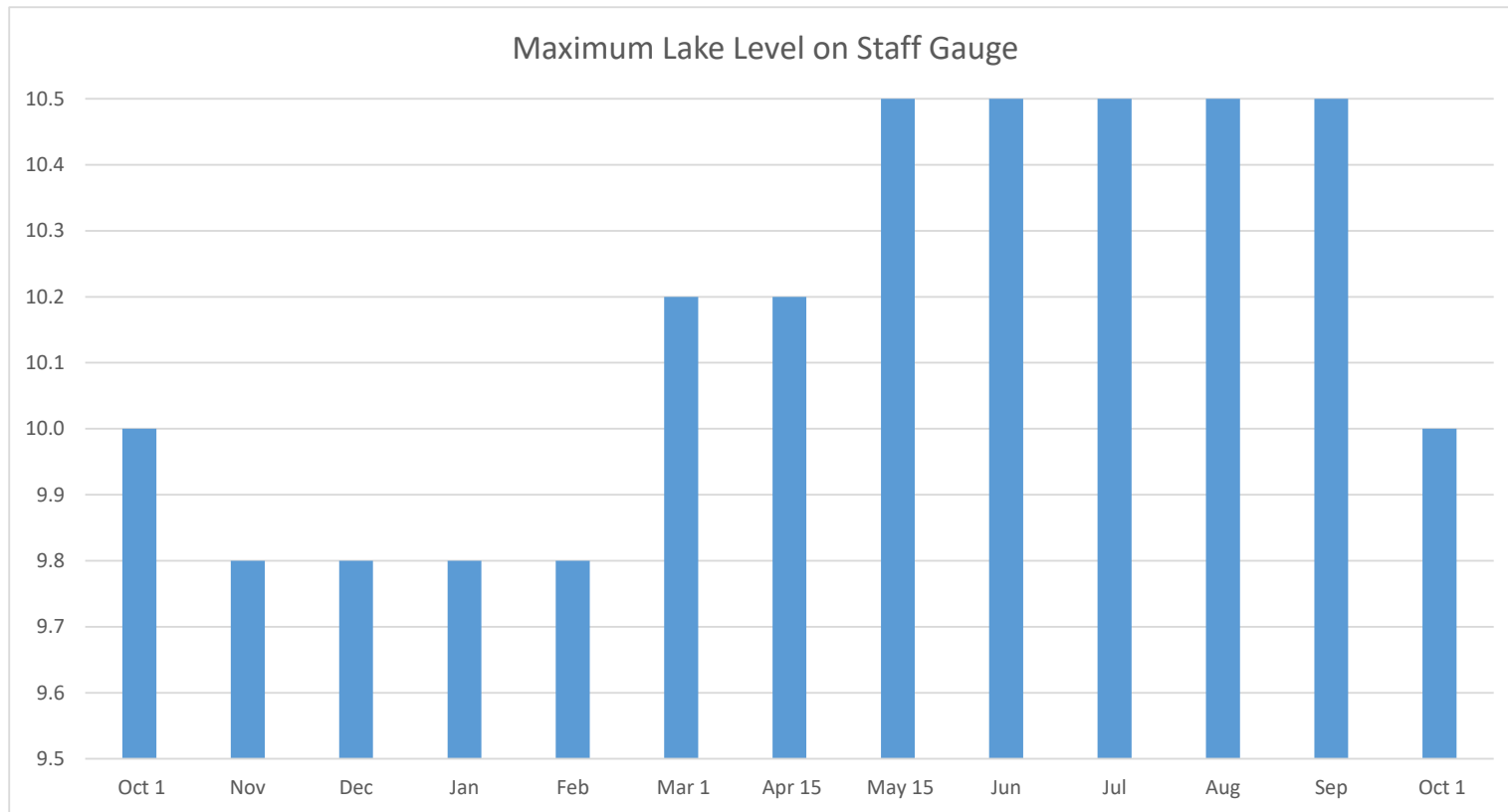
Email from Conservation Administrator Josh Philibert re conversion of stream gauge data to a flow in cubic feet per second, 3/28/2022:

"I have attached the graph showing the conversion of the stream gauge data to a flow in cubic feet per second. This is what I refer to when checking on the minimum and maximum flow rates. A gauge reading of 0.5 ft is equivalent to about 0.5 cfs, and a gauge reading of 1.7 ft is equivalent to about 20 cfs. I know from speaking with others that the stream level rises above 1.7 ft on the gauge, so there are times when the flow rate exceeds the maximum, but I have not witnessed that, yet." (See conversion graph on p. 6)

Summary	CuFt/Sec	Brook Ht (ft)
Max.	20.0	1.70
Min. Nov-Apr	4.5	1.15
Min. Nov-Apr	3.0	0.95
Min. May-Oct	1.5	0.75

Maximum Lake Level on Staff Gauge

Date	Oct 1	Nov	Dec	Jan	Feb	Mar 1	Apr 15	May 15	Jun	Jul	Aug	Sep	Oct 1
Maximum Lake Level	10.0	9.8	9.8	9.8	9.8	10.2	10.2	10.5	10.5	10.5	10.5	10.5	10.0



MASSAPOAG BK BLW MASSAPOAG LAKE AT SHARON 01105195

