

From original email dated: 12 September 2012 to Bob Chapin

I got the pictures and the management plan. As per our phone conversation yesterday, attached find; a copy of a 2002 letter to Jack Quirk from Dana Murch, the Chapter 587 Rule, and my recalculation of Thomas Pond Flow Criteria.

First of all, for non-hydro dams, the DEP has never specified a numeric criterion nor an approved methodology to calculate what the downstream flow rate should be from a Great Pond. It has always been that flow to the downstream channel must maintain water quality standards. Given the great variability of watersheds, natural and channel and outlet conditions it better we don't - every site is different. In 2009 we did adopted the Chapter 587. The specific language in that rule that applies to Thomas Pond is in section 6. A (3).

Class GPA waters where the water level is controlled by a dam and is not used for hydropower storage or generation. Water levels must be maintained to meet all applicable water quality standards, including all designated uses and characteristics of Class GPA waters, and flow must be provided for downstream waters that will protect all water quality standards applicable to those downstream waters.

I suggest you read through the first couple of sections of the rule in order to understand our intent.

Of course the next question from lake associations that want to responsibly manage their dam would be, "What flow do you recommend?" Here, as detailed in Murch's letter the Aquatic Base Flow (ABF) was presented and USF&W equation used as the best available technology of the time - it is a reasonable estimate. Apparently that caused an issue on the lake that is still brewing. Murch gave guidance to Quirk in revising that number down to 1.6 cfs and then allowing 1.2 cfs during drought conditions. Still reasonable

I can only assume that the management plan was written by a consultant, and after review, the only value that I would dispute is the 2.4 cfs in item 4 of the Objectives. Everything else seems reasonable, including the proper equation used for the stop log flows. I would note that our records show that the pond is 533 acres and not 500, but that has effect on the final values presented. Since 2002 the USGS has developed regression equations for determining monthly

median flows which are more accurate than the USF&W equation - this is referenced in section 3 of Chapter 587. I ran the numbers for your watershed (attached). The minimum I came up with for the August Median Flow i.e. lowest seasonal ABF is 1.05 cfs. That is pretty close to the lowest value given by Murch. So given current technology, I have calculated a summer ABF for Thomas Pond to be 1.1 cfs (rounded up) and recommend that that be the minimum discharge through the spillway. I ran the weir equation for 1.1 cfs and applying whole inch thicknesses of the stop logs, you can discharge 1.5 cfs at $H = 2$ inches - you could change the first line of the table.

Addressing objective 1 of maintaining a level between 17 -20 inches, which may be an issue on the pond. That has to do with the ability of the spillway structure to pass a storm flow through the notch - you have to have the space. I did not look at those flows, but I defer to whomever wrote the original plan.

Finally, I do have a call into Francis Brautigam, IF&W biologist for his opinion of the needs of Dingley Brook. He is an excellent resource for you. Oh, also I did scan in your plan for my records and included the PDF for your records.

If you have any further questions or need clarification, don't hesitate to contact me at any time.

Peter

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