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Lenox Conservation Commission
Lenox Town Hall
6 Walker Street
Lenox, MA 01240

Lee Conservation Commission
Lee Town Hall
32 Main Street
Lee, MA 01238

September 9, 2011

Dear Sirs and Madams:

In response to questions raised at the recent meeting with the Lenox Conservation Commission, I am writing to offer suggested modifications of the monitoring program relating to the drawdown of Laurel Lake. The 2011 program is costing the Laurel Lake Preservation Association (LLPA) about \$14,000, a substantial burden for a group of citizens with no guarantee of regular support from either municipality (\$2500 one-time in 2011 from each town) or the Commonwealth. However, this program apparently did not comply with the Order of Conditions at the intended level of detail as interpreted by the Lenox Conservation Commission. Substantially greater expense is not sustainable and not justifiable in relation to programs at other Berkshire regional lakes, but we think we have reached an understanding of what the Lenox Conservation Commission is seeking, and offer the following plan to meet at least the spirit of requirements listed in the Orders.

We recognize that the Lee Conservation Commission was not represented at this meeting, and has not raised any objections to the program as conducted or results submitted to date. Some background is supplied in this letter to make the needs and suggested approaches clear. Issues relate to interpretation of the Order of Conditions issued by the Lenox Conservation Commission, which is very similar to that issued by the Lee Conservation Commission, but contains variable levels of detail for different components and is organized in a manner that does not make it obvious which clauses are subordinate to others. We attempt to clarify here, but welcome further clarification from either commission.

Special Condition 1A. Site specific sediment conditions. These were characterized as rock, cobble, gravel, sand and muck at 1 ft water depths along 34 transects to a water depth of 8 ft. This should not have to be done again for some years, as conditions do not change rapidly. Even with drawdown expected to produce coarser peripheral substrate, shallow areas are already dominated by coarser particles. However, the question of organic content of the muck and characterization as muck vs. silt was raised.

Proposed resolution: We will collect three samples of muck sediments and have the organic content tested, so that these sediments will be better understood. This can be accomplished this year and should effectively end this need for the duration of the Order.



Special Condition 1B. Plant assessment. Some elements of this clause are refined in substantial detail in Condition 1D, but lack of detail for other elements caused misinterpretation on our part. Lenox Conservation Commission apparently intended that multiple plant surveys be conducted, that algae beyond those associated with rooted plant growths be characterized, and that emergent vegetation outside the presumed boundary of the lake be monitored. Direction was taken from Special Condition D, which outlined the monitoring program for plants and invertebrates, but this was insufficient to cover these other intended elements.

Multiple plant assessments greatly increases cost, but is done in some cases where management may vary annually (as with harvesting or chemical treatments) and early season assessment can guide management for the coming summer. It is true that plants germinate and reach peak abundance at various times, depending on species, weather, and other environmental and human factors. It is reasonable when considering drawdown to have both early season (June) and late season (September) assessments, but not more frequent than that; I know of no lake anywhere that performs monthly assessments.

Algae not associated with rooted plants are indeed important to the condition of Laurel Lake, and might be affected by the drawdown indirectly, but are not a central focus of this program. It is reasonable, however, to assess algae as part of an overall program to improve and protect the lake. Some algal assessment has been done in the past. Monthly samples between May and September would cover the time period of greatest interest.

Emergent vegetation has been shown to be unimpacted by drawdown in the vast majority of studies conducted. This is covered in the GEIR, and work at Indian Pond in Becket provides documentation to this effect from a nearby system. The condition was interpreted to mean emergent vegetation encountered along the transects set up in accordance with Condition 1D. Separate assessment of emergent wetlands was apparently desired by the Lenox CC.

Additionally, the Lenox CC was concerned that the backwater area beyond the causeway at the northwest end of the lake was not included in the monitoring, but could be considered part of the lake. It is not easily accessible, but the culvert under the road is unblocked and one could interpret this area as part of the lake. Previous discussions during hearings led us to believe that under any greater drawdown this culvert would be sandbagged to maintain water in this backwater area, which would suggest that it was not part of the lake in terms of management. However, cursory examination on several visits indicates that this area has substantial milfoil, would be subject to zebra mussel colonization, and should be managed through drawdown.

Proposed resolution: Early season and late season plant surveys will be conducted, starting in 2012. However, a check for zebra mussels and Eurasian watermilfoil in water <2.5 ft deep (the 2010-2011 drawdown zone) will be conducted in September 2011. Reduction in the level of effort by 50% (17 transects instead of 34 in the main body of the lake) will allow two surveys per year starting in 2012 within cost constraints. Surveys will work in 2 ft water depth increments instead of 1 ft, but will extend to a water depth of 14ft, covering nearly the entire littoral zone. See the attached memo that evaluates the effect of this effort reduction on data utility. We will



add an 18th transect to the backwater area to facilitate its characterization starting in 2011. We will collect a phytoplankton sample from a central area within the lake once a month from May through September and analyze these. We will establish 10 plots of 4 square meters in emergent wetland areas and provide photodocumentation of plot condition in June and September of each year, beginning in September 2011. Five plots will be in the emergent wetland associated with the backwater area (see rectangular area on the attached map) and five plots will be associated with the wetland at the east end of the northern cove of Laurel Lake (triangular area on attached map). We will provide a narrative interpretation of photodocumentation, but most important will be ability to visually detect any substantial changes. Subtle changes can happen naturally and would not be legitimately attributable to drawdown or other similar lake management actions.

Special Condition 1D. Plant impacts – This clause states “Map plant community annually...” The verb “map” was interpreted to mean data collection on a spatial scale, but it was the intent of the Lenox Conservation Commission that a map be prepared once per year. It is not clear what time of year the map is to represent or whether the map would include cover, density, or assemblage composition, not all of which can be put on the same map. The actual data generated by the June survey are far more useful in quantitative evaluation of impacts, as provided in the late August report to both Commissions. But if a map is what is desired, it can be produced. As the June survey only covered out to 8 ft of water depth, with sporadic observations in deeper areas, a map from those data would be incomplete. In the absence of additional detail, it should be considered that a late season map would most likely provide the greatest utility in evaluating management for the coming year and assessing the full impact of drawdown, but will not include some species that develop and disappear early (e.g., curlyleaf pondweed).

Proposed resolution: We will construct a late season map of Laurel Lake vegetation based on observations in September, using the approach provided in past ESS mapping efforts. There will be a cover map, a biovolume map, and a dominant species map. This will be done in September 2011 and subsequent Septembers, but there will be more detailed point by point data in support of September maps beginning in 2012.

Special Condition 1C: Watershed management action plan. There is no detail in this clause, but the Lenox CC believes that it has given guidance to the LLPA in the past regarding the use of the publication “Surveying a Lake Watershed and Preparing an Action Plan”. This publication pre-dates now common use of GIS, GPS, and related tools that can jump start assessment with limited volunteer effort. However, it cites the conservation commission, town government, and various Commonwealth agencies as resources for such efforts, including manpower and grants! As neither of these appears to be forthcoming, despite efforts to acquire outside funding, the LLPA had WRS Inc. prepare a watershed assessment that was included in the late August submission to each conservation commission.

The assessment indicates that current nutrient loading, particularly of phosphorus, is slightly higher than desirable. A number of general approaches to reducing phosphorus loading have been suggested. A reduction of 25% would be great, and a reduction of only 10% might be adequate to maintain desirable lake features. Attainment of such reductions would be a function of cooperation and funding outside the resources and power of the LLPA, however.



What has been provided is not, however, a management plan in a complete sense, and while no timeframe was specified for completion, the Lenox CC feels that more progress should have been made by this time. The LLPA does not feel that it is its obligation to lead this effort, and the Lenox CC feels that since a watershed management plan was accepted as a condition of the drawdown permit, it is the obligation of the LLPA to develop this plan. Any plan developed by the LLPA without substantial input by all stakeholders, including the Lenox CC and other town boards in both Lenox and Lee, is unlikely to come to fruition from extensive experience in such efforts. The LLPA is therefore being tasked with pulling together all stakeholders to develop a plan, although the Lenox CC believes that a plan created and presented to stakeholders for comment will meet the intent of the Special Condition.

To repeat what has been said several times already in meetings, no amount of watershed management will help with the milfoil or zebra mussel problem. Watershed management is always a good idea, however, was put into the permit and not challenged, and we will make a good faith effort to comply.

Proposed resolution: We have already surveyed the watershed and know more about problem “hotspots” than was given in the report. Note that the guidance document referenced by the Lenox CC suggests not pointing fingers at specific property owners or creating adversarial situations, and we tried to be more general. To produce a more specific plan, we will have to identify parcels in need of work. The areas delineated in red on the attached map of the watershed represent areas that should be investigated further and could, if managed well, produce the desired level of nutrient load reduction. Over the next two years, we will provide a rationale for why these parcels are potentially important and a written framework for assessing these parcels. We will solicit town aid (both Lenox and Lee) in approaching land owners to allow access, performing assessments, collecting samples as needed, and facilitating further management planning. If we cannot get cooperation and support at that stage, it is unreasonable to ask for more from the LLPA, which has no powers of access or enforcement. If we get cooperation and the appropriate data, the LLPA will work cooperatively with both towns and any interested stakeholders to develop a workable plan for which the towns can seek funding or implement directly as resources allow. However, the LLPA does not have the funds to complete the Watershed Management Plan in 2011, and must defer the effort while it seeks them. It anticipates funding further action on the plan in calendar year 2012.

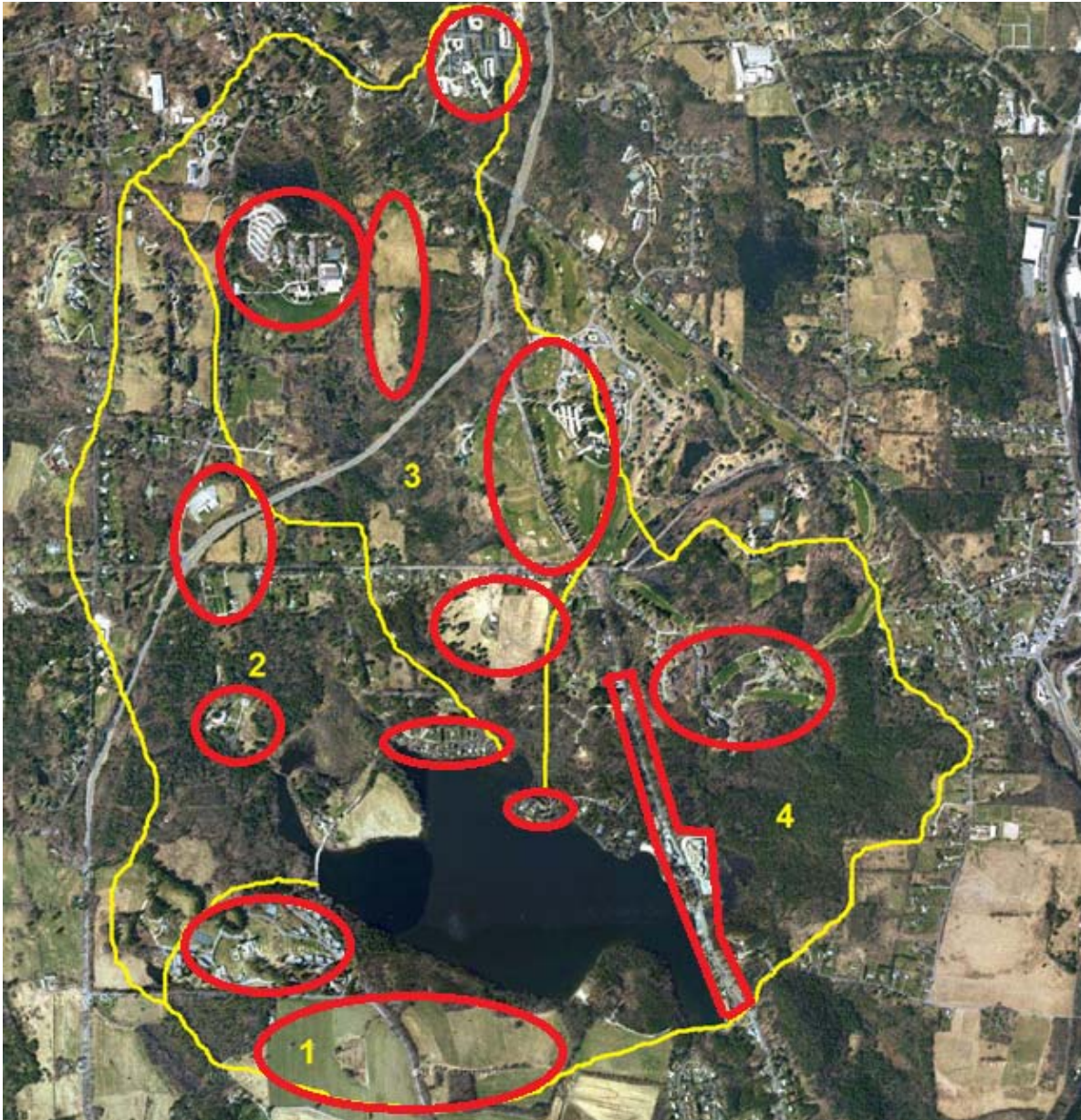
Sincerely yours,

A handwritten signature in black ink that reads "Kenneth J. Wagner". The signature is written in a cursive, flowing style.

Kenneth J. Wagner, Ph.D., CLM
Water Resources Manager, WRS INC.



Targeted locations for emergent wetland monitoring plots adjacent to Laurel Lake.



Potential watershed “hotspots” for nutrient loading to Laurel Lake.