

Draft Watershed Management Plan: Executive Summary

Condensed from the Executive Summary of the September 1 Draft Watershed Management Plan of the Webster-Highland Lakes Watershed Partnership (WHLWP). The full plan is available at Webster-HighlandLakesPartnership.org.

During the summer of 2003 and late-summer of 2004, significant outbreaks of nuisance bluegreen algae, including cyanobacteria, were observed in Webster Lake, which greatly diminished its use for recreational purposes and posed a human health threat. Recently, New Hampshire Department of Environmental Services (DES) included Webster Lake on the draft 2006 list of impaired water bodies due to the reoccurrence of cyanobacteria. Ongoing water quality sampling has also revealed occasional elevated levels of turbidity, phosphorus, and *E. coli* bacteria, which represent additional water quality concerns.

The [final Watershed Management Plan of the WHLWP] will serve as a planning tool for the members of the WHLWP and municipal officials for future planning, scheduling, and seeking additional funding to implement feasible measures that will improve water quality in both Highland and Webster Lake and maintain their primary use as valuable recreational resources for years to come. Although the primary focus of this project is on Webster Lake, the water quality objectives, data analysis, and recommended measures contained in this report may be beneficial and could be applied in the Highland Lake watershed as well. Approximately 75 % of the Webster Lake watershed, which includes Highland Lake, is located in Andover.

To improve water quality conditions in Webster Lake, a reasonable goal would be to reduce the existing in-lake phosphorus concentration by 2 to 3 parts per billion (ppb) and maintain an average in-lake phosphorus concentration closer to 11 or 12 ppb, rather than 13 to 15 ppb. This may seem like a minor difference in concentrations, but lake water quality conditions, in terms of water clarity and algal productivity, can be substantially

different with an average phosphorus concentration closer to 12 ppb as opposed to 15 ppb.

The proposed reduction would buffer against any short-term, episodic influxes similar to those that may have occurred in 2003 and 2004. It may also allow for some reasonable amount of residential growth that is likely to occur in the watershed in the future.

The existing phosphorus load would need to be reduced by about 94.0 kilograms per year [or about 207 pounds per year] to lower the in-lake concentration by 2 ppb and by as much as 140 kg/yr [about 308 lb/yr] to lower the concentration by 3 ppb. These load reductions represent about 18% and 26% of the estimated existing phosphorus load, respectively, contributed from tributaries and septic systems.

Accomplishing the recommended load reductions would best be achieved by reducing contributions from the many different sources of phosphorus that exist in the watershed and around the Lake. There is no one particular source where the entire targeted load reductions can be achieved with a simple fix.

The existing phosphorus load is comprised of many different sources that exist within the watershed, including:

- residential development
- timber harvesting
- roadway runoff
- manure contained in pasture areas, stables and pens
- manure used for fertilizer on hay-fields

Other sources include:

- shoreline septic systems
- pet wastes
- lawn fertilizers
- use of detergents
- sediment erosion caused by excessive runoff flow
- construction activity
- wave action
- sediment disturbances from boating activity
- internal loading from bottom sediments,

to name a few.

None of these sources or activities, by themselves, contributes more than

30% of the total phosphorus load entering Webster Lake. For most of these sources, their percentage of the total contribution is estimated to be less than 10 percent.

Based on pollutant modeling and previous sampling results, the majority of the recommended load reductions could be achieved through a combination of

- additional manure management measures
- septic system upgrades for shoreline lots around Webster Lake.

Manure management measures may include additional fencing in pasture areas to keep cows out of drainage ditches and by working with farmers to modify the timing of manure spreading on hay-fields and avoid applications on frozen ground or saturated soils. Although there has been a great deal of improvement in this area over the years, there is still room for improvement.

Addressing some of the smaller livestock pens and horse stables that exist in residential areas through local ordinances and drainage modifications would also be crucial step in the process.

There is a critical need to work with shoreline homeowners to identify and upgrade the few poorly functioning shoreline septic systems that are likely to exist around Webster Lake. Here again, over the last 20 years or so, many

shoreline homeowners have upgraded and improved their septic systems.

Approximately 15% to 20% of the total phosphorus load to Webster Lake is estimated to come from shoreline septic systems, with the majority of the inputs associated with poorly functioning or failing septic systems. Approximately 10% to 15 % of shoreline systems are estimated to be poorly functioning or failing. More information is needed to identify exactly where these potentially failing systems are located.

The remainder of the load reductions would perhaps come from:

- treatment of road runoff in specific areas
- additional maintenance of the existing storm drain system
- additional zoning regulation updates to address certain activities, such as residential development, sediment disturbances, and timber harvesting
- a coordinated education and outreach effort that is updated each year to educate homeowners, lake users, and other stakeholders on how their activities affect lake water quality.

The complete 58-page report is available at Webster-HighlandLakesPartnership.org and includes extensive data analysis; many charts, graphs, and maps; recommendations; and a proposed implementation plan.



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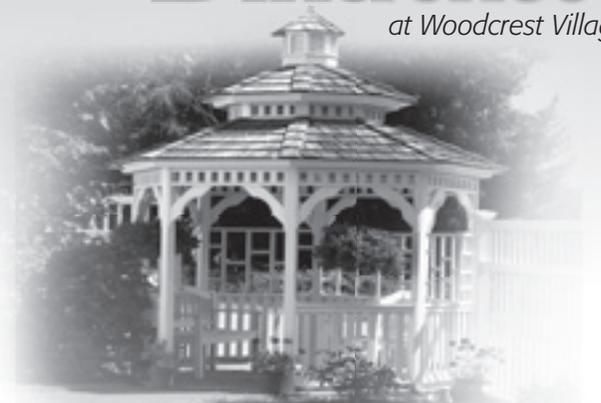
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