TOWN OF ATHOL
OFFICE OF PLANNING & DEVELOPMENT

584 MAIN STREET, ROOM 29 Phone: 978-721-8500 x517
ATHOL, MA 01331 Email: planning@townofathol.org

Summary of Findings
Lake Ellis 604(b) Watershed Survey

For the past 12 months, the Town of Athol and consulting engineers Weston & Sampson have been working to assess the conditions of Lake Ellis, identify impairments including aquatic weeds and phosphorus levels, and develop measures to eliminate any impairments so the lake can continue to function as a desirable recreational and scenic resource.

The survey is complete and the draft report is available for public review and comment on the Town's Planning Department website at:
https://www.athol-ma.gov/dept-of-planning-and-development.

Comments are due by Thursday, July 15, 2021.

Key findings:

- Lake Ellis continues to be subject to widespread growth of nuisance aquatic weeds, most notably Eurasian and Variable milfoil;
- The lake remains under the TMDL for phosphorus concentrations but is climbing. Phosphorus concentrations observed in Mill Brook, the largest contributing tributary sub-watershed to Lake Ellis, are also very low, in the range indicated as below 20 ppb;
- Water clarity reported is excellent, particularly in consideration of the relatively shallow mean depth of the lake;
- Lake Ellis meets the water quality criteria for bacteria for Class B freshwater bodies, and;
- Based on the limited success of aquatic herbicides for milfoil and bladderwort, it would appear that the regrowth of milfoil as the nearly exclusive aquatic weed rampant throughout the lake is in part a response to the relative absence of other species and an indication of the resilience of milfoil in response to a limited application of herbicides that are associated with effective short-term milfoil treatment.

Key recommendations include:

- Restoration of functional outlet to enable seasonal drawdown for weed control, shoreline maintenance, flood control;
- Relocation of northern drainage into new outlet;
- Installation of bioremediation swale upgradient from Northern Drainage Outlet;
- Chemical Treatment for Milfoil with ProcellaCOR;

- Seasonal lake drawdown as soon as possible (With drawdown in place, it is recommended that targeted sediment excavation in near-shore areas be conducted to remove decaying weed matter and root stock); and
- Consideration of chemical application to open water areas to bind sediment phosphorus (e.g., Phosloc or equal).

Next Steps:

- Formalize a Lake Ellis Watershed Management Partnership to include representatives of relevant Athol municipal departments, Friends of Lake Ellis, Secret Lake Association, and the Millers River Environmental Center to share information, review development proposals, conduct education and related public outreach efforts, and coordinate funding from a variety of potential funding sources.
- Prepare hydrographic survey of Ellinwood Brook to determine elevation and position of "Emergency Lake Outlet," refine watershed boundary and measure flows discharged from Lake Ellis.
- Evaluate the feasibility of removing industrial-era run of the river dams along Mill Brook, including replacement of storage volumes with stormwater vegetated berms, bioretention systems and other elements providing nutrient and solids removal capability.
- Conduct buffer zone surveys and identify areas of buffer zone intrusions and potential pollution sources.
- Develop a Beaver Monitoring Program in the Mill Brook watershed, including the stormwater detention basins associated with the Route 2A shopping plaza.
- Develop a Stormwater Pollution Prevention Plan for the Elementary/Middle School complex to include sweeping of paved areas, installation of sediment sacks in catch basin inlets, and evaluation of the feasibility of installing stormwater Best Management Practices (e.g., vegetated berms, bioretention basins) upstream of stormwater discharge outlets.
- Develop vegetation management plans for both the Elementary/Middle School Complex and the Athol High School athletic fields to include nutrient control limits for both phosphorus and nitrogen and to limit total annual nutrient loading from athletic fields and facility grounds to protect Lake Ellis from excessive nitrogen and phosphorus inputs.

The Project Team thanks the Friends of Lake Ellis, Chief Joe Guarnera and Lt. Andy Soltysik of the Athol Fire Department, and those who participated in any of our community meetings, all of whom provided input and support for the duration of the project.

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