

AMSTON LAKE
WASTEWATER MANAGEMENT STUDY
for the
TOWN OF LEBANON, CONNECTICUT



November 2007



September 3, 2008
W-P Project No. 10840A

Mr. George Hicks, Sanitary Engineer
Department of Environmental Protection
Bureau of Water Management
Planning and Standards Division
79 Elm Street
Hartford, CT 06106-5127

Subject: Amston Lake Wastewater Management Study
Amendment to Final Report

Dear George:

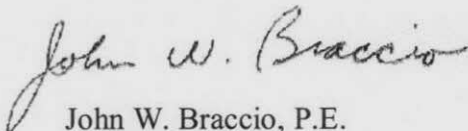
We are writing to you on behalf of the Town of Lebanon. At the Board of Selectmen's meeting on November 13, 2007, the Selectmen indicated that they had officially approved the *Amston Lake Wastewater Management Study for the Town of Lebanon - Final Draft, June 2007*, with the condition that "Table 4-3, Preliminary Implementation Schedule" be revised to reflect what they believe is a more realistic schedule.

As directed by the Board of Selectmen, the *Amston Lake Wastewater Management Study for the Town of Lebanon - Final Draft, June 2007* has been amended, and a copy of the Final Report is enclosed. On behalf of the Town we are requesting that DEP review and approve of this report.

Please let the Town know if this report is approved by DEP. As you may be aware, the Town has been in the process of forming a Water Pollution Control Authority in order to proceed with this important wastewater management project.

Feel free to contact the First Selectwomen (Joyce Okanuk at 860-642-6100) or me with any questions or comments.

Very truly yours,
WRIGHT-PIERCE



John W. Braccio, P.E.
Vice President

cc: Joyce Okanuk, First Selectwomen

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WASTEWATER MANAGEMENT STUDY
FOR THE
TOWN OF LEBANON, CONNECTICUT**

Prepared By:

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AMSTON LAKE WASTEWATER MANAGEMENT STUDY

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Section 1

SECTION 1

EXECUTIVE SUMMARY AND CONCLUSIONS

1.1 EXECUTIVE SUMMARY

Amston Lake is a 182 acre freshwater lake located on the border between the Towns of Lebanon and Hebron. The lake itself is privately owned by the Amston Lake District, a tax district formed in 2002 by the Connecticut Legislature's merging of the Amston Lake Hebron Tax District and the Amston Lake Lebanon Tax District. The portion of the District in the Town of Lebanon is a mostly seasonal community, including a significant number of small cottages built on small parcels of land. Approximately 70% of the residences on the Lebanon side of the District are zoned for seasonal occupancy only.

Due to concerns over the potential impact on Amston Lake water quality by the existing septic systems in the local community, the Connecticut Department of Environmental Protection (DEP) issued an Abatement Order in 1986 to both Hebron and Lebanon, requiring the preparation of an engineering study to evaluate the current and future wastewater needs of the Amston Lake area. A copy of the Abatement Order addressed to the Town of Lebanon is provided in Appendix A. In Hebron, the evaluation was performed and a wastewater collection system was installed with treatment at the Colchester-East Hampton Joint Facilities Water Pollution Control Facility in East Hampton. In the years since the Abatement Order was initially issued, discussions regarding improved wastewater treatment have occurred in Lebanon, but no action has been taken. Recently, due to increasing concerns about deteriorating lake water quality, the DEP has renewed their attention on Amston Lake, and the Town of Lebanon hired Wright-Pierce to conduct the required wastewater management study.

Four different options were considered as potential acceptable means for wastewater management in the Amston Lake District, in the Town of Lebanon. These options include: replacement and upgrade of existing on-site subsurface wastewater treatment and disposal systems to meet current state health code requirements; installation of innovative/alternative treatment technologies, capable of achieving increased nutrient removal, on individual

properties; construction of a community wastewater treatment facility serving only the Amston Lake area; and connection to the existing wastewater collection system in Hebron.

Each of the alternatives is technically feasible to provide improved wastewater treatment and reduce the impact from the existing septic systems on Amston Lake water quality. However, each option has a variety of differing advantages, disadvantages, costs, and other issues to consider. This report describes the evaluation of the different wastewater management options.

Based on the effectiveness in mitigating wastewater impacts on Amston Lake, acceptability to the Town and to the DEP, and both the capital and operating costs, it appears that a connection to the existing sewer would result in the most favorable long-term solution for Amston Lake's wastewater treatment and disposal needs.

1.2 CONCLUSIONS

A significant number of the existing properties appear to have limitations that affect the properties' ability to support a code compliant and/or effective conventional on-site, subsurface septic disposal system. These limitations include small lots with limited acceptable soil conditions, shallow depth to ledge and/or groundwater, and inadequate septic tank and/or leach field design. Due to both the above limitations and the close proximity of the existing subsurface systems to Amston Lake, it is likely that the many of properties, particularly those along Deepwood Drive, are contributing to the nutrient pollution of Amston Lake.

Stormwater runoff is also a contributing factor to lake pollution, but an extensive evaluation of stormwater management alternatives was not included in the scope of this study.

The overall conclusions for each the wastewater management options are:

- *Upgrade of existing on-site systems* - Upgrades would result in the existing systems being closer to achieving current State Health Code requirements for conventional on-site septic systems. Conventional systems, however, would not provide a high level of nutrient removal, and nutrient pollution to the Lake would still occur. Furthermore, due

to the limitations of many lots in the District, is likely that upgrades would still fall short of meeting the current health code.

- *Innovative/Alternative on-site systems* - Such systems could result in improved nutrient removal and reduce nutrient pollution to the Lake, if properly operated, maintained, and monitored. However, such systems are costly to install and require regular maintenance. Additionally, the seasonal nature of many properties could make it more difficult to maintain reliable performance of these systems.
- *Community Wastewater Treatment System* - This type of system could achieve improved nutrient removal and reduce pollution to the Lake. However, it would be the most expensive alternative to construct, and it may be difficult to find a property of sufficient size with sufficient soils in reasonably close proximity to the lake community. Furthermore, the seasonal nature of the community would impact and possibly limit the reliable performance of this type of system.
- *Connection to Existing Sewer* - This option would achieve improved nutrient removal and reduce pollution to the Lake. However, without sufficient zoning restrictions, a sewer could result in increased development of currently unbuildable lots, more intensive redevelopment of existing homes, and more year-round use of existing seasonal properties, all of which could result in increased stormwater runoff and resulting pollution impacts to the Lake. A low pressure sewer system with individual property pump systems would be less costly than a gravity-type sewer system. A low pressure system could also be designed to limit the capacity for additional sewered growth.

Each of the above systems would have a variety of organizational, legal, and funding issues that would need to be addressed as part of an actual implementation program. A summary of the estimated feasibility level costs for the implementation of each alternative at 195 properties, identified in this evaluation as properties with the potential to negatively affect the water quality of Amston Lake (or "properties of concern") are shown in Table 1-1.

TABLE 1-1
SUMMARY OF FEASIBILITY LEVEL COST ESTIMATES

	Capital Cost	Annual Operating Cost	Total Annual Cost¹
Conventional Upgrades	\$4,390,000	-	\$268,000
Individual I/A Systems	\$4,140,000	\$228,000	\$503,000
Community Wastewater Treatment Plant	\$8,615,000	\$115,000	\$642,000
Connection to Existing Sewer ²	\$4,125,000	\$98,000	\$350,000

1. Including capital costs annualized at 2% interest over 20 years, without grant.
2. Assumes installation of low pressure sewer.

The above costs are representative of the average cost of multiple options, for example, different treatment technologies, within each of the four provided wastewater management alternatives. It should be noted that all costs used in this report are preliminary in nature. These costs are intended for use only in the screening and comparison of potential alternatives. Further investigation would be required to refine the provided costs to the point that they may be used as construction or operation cost estimates, or for accurate budgetary purposes. It should be noted that all costs included both in Table 1-1 above as well as the overall study are based on 2007 costs, and are subject to fluctuation.

To obtain the full document contact the Water Pollution
Control Authority: wpca@lebanontownhall.org