

## Floating Wetland Islands

Prepared by: Fred S. Lubnow, Ph.D., Princeton Hydro, LLC

A lake's water quality can be determined by a number of factors, the most notable factor being the amount of algae growth and abundance of aquatic plants present in the lake. Excessive algae and aquatic plant growth thrives on high nutrient concentrations, specifically phosphorous. The presence of phosphorous is the primary reason for this excessive growth and thus efforts to decrease the amount of phosphorous in a lake's watershed (all land that drains directly into that lake) provides noticeable results in improving a lake's water quality. This is certainly the case for Lake Hopatcong.

There are several methods of reducing of phosphorous in a lake's watershed. Watershed management measures include stormwater and on-site wastewater treatment, goose control, and the use of non-phosphorous fertilizers. Some of the most effective means to reduce the phosphorous load entering a lake is the creation and establishment of vegetated Best Management Practices (BMPs) such as stormwater wetlands, riparian lakeshore buffers, and biofiltration/rain garden structures. Wetland systems tend to have some of the highest rates of phosphorus uptake. The vegetation and associated microbial communities within wetland systems will filter out and assimilate phosphorous. Developed lake communities often don't have much space available lakeside for the installation of vegetated BMPs. This is where floating wetland islands (FWIs) come into play.

Floating wetland islands are an alternative to watershed-based constructed wetlands or similar conventional vegetated BMPs. FWIs are structures that are composed of woven, recycled, plastic material which floats in water. Vegetation is planted directly in the plastic material of the FWI with some peat and mulch. The FWI is positioned near-shore (within the no wake zone). The vegetation grows on the FWI, rooting through the plastic material and creating an excellent habitat for phosphorous removal. A set of 10 small FWI cells, 5' x 10', giving a total surface area of 500 sq. ft., will be installed along the shoreline of Ashley Cove, Jefferson Township. These FWI cell will divert some of the existing nutrient in the cove away from the nuisance mat algae and weed and into the plants on the FWI cells.

As the FWI removes phosphorous from the lake, less phosphorous is available for nuisance aquatic plant growth and algae. In addition, FWIs also provide an excellent refuge habitat that attracts beneficial forage fish and gamefish. Another value of the FWIs is that they can be planted with attractive, native vegetation, creating an aesthetic amenity for the lake. FWIs can provide other benefits such as shoreline protection. However, while these ecosystem functions are certainly beneficial, nutrient uptake, particularly phosphorous removal, tends to be one of the primary uses for FWIs.

The FWI cells being installed in Lake Hopatcong's Ashley Cove were purchased through a Non-Point Source 319(h)-grant that was awarded to the Lake Hopatcong Commission by the New Jersey Department of Environmental Protection. This grant covers the costs of the purchase and installation of the FWI cells as well as this year's water quality monitoring of the lake. The grant is currently being administrated by the Lake Hopatcong Foundation.

### Princeton Hydro, LLC

■ 1108 Old York Road Suite 1, PO Box 720 Ringoes, NJ 08551 t. 908.237.5660 f. 908.237.5666

□ 1105 Laurel Oak Road Suite 136 Voorhees, NJ 0803 t. 856.346.0060 f. 856.346.0065

[www.PrincetonHydro.com](http://www.PrincetonHydro.com)