

# **Lost Lake Watershed Advisory Committee (LLWAC)**

**Town of Groton, Groton, MA 01450 978-448-1111**

## **Meeting Minutes - June 18, 2015**

At Town Hall

**Present:** Mark Deuger, Susan Horowitz (BOH), Arthur Prest (Finance Comm.), Michael Rosa

**Not present:** Tom Orcutt (Groton Water Dept.), John Petropoulos (BOS)

**Visitors:** Alex Woodle; Pio Lombardo and David Mitchell of Lombardo Associates, Inc.

**Recorder:** Stephen Legge

**Call to Order:** Chairman Prest called the meeting to order at 7:07 PM.

### **Presentation by Lombardo Associates, Responder to the LLWAC Request for Information, February, 2015:**

For reference, see the seven question list (one page) sent out by the committee to RFI responders, for tailoring their presentation responses at invited meetings.

Mr. Lombardo is Project Director, Manager and Engineer of Record with the firm. Mr. Mitchell has much experience with water quality data collection and is a participant in a previous diagnostic study of Lost Lake. He is quite familiar with the Lost Lake watershed issues. After introductions, Mr. Lombardo addressed the committee. He will provide a copy of his slide presentation.

Phosphorus is usually the primary cause of water quality problems. Mr. Lombardo presented a bathymetric map (depth contour lines) of Lost Lake and Knops Pond (see slide). Flow is from Knops Pond, a glacial remnant kettle hole, over a shallow sill, into Lost Lake and thence over a dam.

Horowitz commented, our septic system situation is under control; the Board of Health is of the opinion that septic systems in total do not contribute much to the lakes' problems.

Lombardo: In the "old days", there were direct discharges to the lakes. He wonders how much phosphorus is still in the soil. The ground water system provides transport to septic phosphorus, sometimes to places where it is not wanted.

Lombardo provided a few helpful definitions: "Labile" means a loosely attached form of phosphorus which is readily available to microorganisms. Macrophytes refer to algae blooms.

Lombardo recommends the following approach to our problems. Review the existing data and identify gaps in our knowledge. Then develop a water quality sampling plan which will fill in

the gaps and turn more assumptions into actual facts (refer to 3 slides, “Recommended Approach”).

Lombardo continued, dissolved oxygen in the water (DO) is a means by which to monitor water quality in the lake. There are some simple ways to monitor continuously. A good DO measurement would be greater than 5 parts per million (ppm). Less than 3ppm is considered a sign of poor quality.

There are different, and important, sources of phosphorus in the water: 1) septic systems, 2) resident in sediment, and 3) tributaries which contribute through mass flow into the pond.

If there are only a few bad septic systems there are several not so expensive solutions possible. Materials/chemicals can be introduced into the drain field which react with and immobilize the phosphorus.

Visitor, Woodle commented, with regard to sediments, five feet average depth and a large number of motorboats means mucky bottoms will get well stirred up.

Lombardo mentioned a phenomenon called “macrophage-sediment-phosphorus pumping” that can be a concern for shallow ponds. There was a brief discussion about dredging as a possible solution and mention that it could be very costly.

Mr. Mitchell asked, how do we define success for our project?

Woodle answered, “low measured phosphorus.”

Mitchell offered, “reduced algae blooms” and “no impairment of recreation on the lake”.

Prest said “no algae blooms”.

Mr. Lombardo: The goal with storm water is that there should be no direct runoff into the lakes. Strategically placed structures should force water into the ground before it reaches the lakes.

Mr. Mitchell: Concerning management of agricultural wastes, build buffers between animals and brooks. Management of manure is very important. Mr. Lombardo added that studies of these subjects in watersheds are generally not very expensive.

Mr. Lombardo: back to septic systems. The life of a properly designed system should be 60 - 80 years. A good septic system is assumed to remove 83 – 90% of the phosphorus if within 500 feet of a water body. A municipal sewer may be overkill for most septic contamination issues. The Groton proposal resulted in a theoretical cost of \$40K per household.

There are cheaper alternatives to remediate existing systems that are problematic. One possible solution is to install permeable reactive barriers between the system and water bodies. These act in much the same way as riparian barriers in nature.

Woodle: very steep topography around Lost Lake may hinder this type of solution here.

Two other solutions to problem septic systems are “hypolimnetic aeration, which involves adding the element iron to immobilize phosphorus, and using rain gardens and bio-swales.

Mitchell, on storm water: Use Secchi disks to measure turbidity in the lake over the weekend (heavier rains are predicted). If ambitious, do visual surveys of the lake at regular (and frequent) intervals to see where storm water enters the lake. This should be done during and after the rain events.

Mr. Lombardo was asked for estimates of costs for their services. He commented that it could cost \$25-30,000 to analyze one property. They would drill a number of testing wells to measure location and movement of plumes.

Mitchell suggested paying strong attention to the seasonality of the phenomena we have discussed. It is far better to test in each season for a whole year to really understand what is going on.

Mr. Lombardo asked, what is our budget? When do we expect to start collecting data? He offered to compile some costs. He also offered to consider the use of volunteers and how this might affect costs.

Woodle said approximately 80% of the properties around the lakes are now in year-round use.

Lombardo recommended reading the book, *Design with Nature*.

Mr. Lombardo summarized his firm’s fitness to help us with our problems. They have done very detailed analysis of water bodies in several towns using GIS data, soils maps, ground water data and other inputs. They are able to make lot-by-lot projections from this kind of work. The towns involved in these types of studies are Acton and Concord in Massachusetts and East Hampton, NY. They have also done comprehensive waste water management studies of watersheds.

Misters Lombardo and Mitchell concluded their remarks and left the meeting at 9:20 PM.

### **Discussion of Lombardo’s Presentation:**

Rosa proposed not to interview Nitsch Engineering, the fourth organization to reply to our Request for Information, at a future meeting; the three consultants seen to date have given us sufficient perspective.

Horowitz: David Mitchell (Lombardo) knows our town and our ponds very well – this is a significant advantage.

Guest, Woodle: He is very impressed with Lombardo. Their approach is technical, but they also seem to have a wide perspective on solving problems.

Deuger: He likes Lombardo or ESS as a Number 1 candidate. He cautioned, however, that we must go through a proper municipal procurement process if we are to hire either one. Deuger continued, we need to brainstorm what we want in an RFP. We don't need a consultant for everything. We can design our own water quality measurement and monitoring scheme.

The general opinion of the committee was to brainstorm at the next meeting what to do next. The two absent members should be involved in this.

Rosa moved that a subcommittee be established of three members, consisting of two members of the committee and one from the public, to be appointed by the Chair. This subcommittee would prepare a framework for an RFP, for the LLWAC to consider. Horowitz seconded. The motion was approved unanimously. Prest decided Deuger, himself and Alex Woodle would be his appointees.

#### **Other Business:**

Prest wants to organize a tour of Lost Lake and Knop's Pond by boat for the committee members. He is hopeful all will actually see evidence that there is a problem on Lost Lake.

#### **Adjournment:**

The meeting was adjourned with unanimous consent at 9:35 PM.

**\*\* No date was established for the next meeting. \*\***