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Date: June 14, 2012

To: Joanna Bilotta; President, Lake Shirley Improvement Corporation

From: Gerry Smith; President/Aquatic Biologist

Re: **2012 Aquatic Plant Survey & Inspections on May 19, June 8 & June 10 – Lake Shirley**

This memo summarizes the findings of our Aquatic Plant Survey and Inspection performed on May, 19, June 8 and June 10. Considering the extremely mild winter and early spring, we felt it was important to get out on the lake sooner than normal in case the lake's plant growth was ahead of prior recent years. During the first two surveys, both you and Jay representing LSIC, were kind enough to take me around the lake in your boat to perform the survey. Ritchie Patry also joined us on the second survey. Water clarity at mid-lake was generally good at between 8 and 9 feet at the time of these surveys as measured with a Secchi Disk by Ritchie., however, during the first survey, windblown pollen along shore, hindered visibility down into the water. During the second inspection, the pollen had mostly dissipated but the skies were overcast which limited visibility some as well. I performed a third inspection over a portion of the lake's north basin myself on the afternoon of June 10th in order to further establish the need for and limits of treatment towards the north-central portion of the north basin. The skies were sunny and the water surface was calm, allowing for good visibility into the water.

We observed milfoil and curlyleaf pondweed growth in water depths of up to about nine feet. Of the two invasive and non-native milfoil species found in Lake Shirley in the past, Eurasian watermilfoil (EWM) was the only milfoil species we observed during our three surveys this spring. We did not find any variable watermilfoil last year or so far this year but that is not to say that it is no longer present in the lake. We also observed considerable cover of invasive Curlyleaf pondweed. Curlyleaf pondweed is substantially more abundant than EWM at this point. We're pleased to report, however, that the overall density of EWM and Curlyleaf pondweed was slightly less now than seen last year and substantially less than just 2 or 3 years ago.

While this is positive news about the reduced cover and density of EWM and Curlyleaf pondweed, the distribution of these invasive plants is still too widespread to effectively manage with Diver hand-pulling, or some other non-chemical technique. The decline seen in these two invasive plants was anticipated and we'd hope to see further declines in EWM and particularly Curlyleaf pondweed following this year and beyond. We do recommend and propose herbicide treatment again with Reward/Diquat herbicide in an effort to kill the pondweed before it can fully mature and produce its reproductive "nut like" tubers. We're very concerned that if treatment were to stop now, we'd potentially lose the gains we've made in sharply reducing both the density and distribution of these two highly invasive plants in recent years. We propose continuing to examine the lake's plant composition and distribution on a "year by year" basis and then making our management recommendations at that time.

Some of native aquatic plants also observed during the survey, included, fanwort, coontail, bushy pondweed, bladderwort, sago pondweed, wild celery, ribbonleaf pondweed, thinleaf pondweed, waterlilies and two macro-algae called muskgrass and stonewort. The growth for many of these

native species was just beginning and typically lags behind the early season and aggressive growth of milfoil and curlyleaf pondweed. The growth of sago and thinleaf pondweed, however, in "Millionaire's Cove", while still well below the water surface, will undoubtedly be abundant and approaching the surface come July.

A map of proposed Treatment Areas is attached. Based upon our survey findings, we recommend approximately 45 acres of the total lake area be chemically treated with Reward (Diquat) herbicide.

This 45 acres is slightly more than the 40 acres last year but appreciably less than the 68 acres treated in 2010 and the 70 acres treated in 2009. No chemical treatment will occur within Shirley. The attached map represents primarily milfoil and curlyleaf pondweed cover, in most treatment areas, of generally between > 10% and 50%.

We are intending to chemically treatment of Lake Shirley on Tuesday, June 19th. The lake will be closed to all water uses, including swimming, fishing and boating on that day. There will be an additional restriction on water use for irrigation, watering livestock and drinking purposes for 5 days. We have recently sent you a written "notice of treatment" for you to publish in the local paper(s) and we have also mail you printed posters today, for you to post around the lake shoreline a few days prior to treatment.

We'll again be treating with the Reward (Diquat) herbicide as we have in prior years. Considering the sensitivity of the milfoil and especially the curlyleaf pondweed to the Reward herbicide, we'll be treating at a low rate (dose) of ~ 1.0 gal per treated acre of vegetation. Maximum USEPA label rate for Reward is 2.0 gals/acre.

I hope this information is helpful to LSIC. Feel free to forward this memo to the Conservation Commissions and other appropriate parties. Thank you.