Bear Lake Improvement Feasibility Study & Management Plan Update

By: Restorative Lake Sciences

June 22, 2017
Map of Bear Lake soils is being created and possible impacts on water quality associated with specific soil types will be discussed in the study/plan.
Maps of immediate watershed surrounding Bear Lake (area draining into the lake) are being developed. Brenda Moore has also created maps and all will be included in the study/plan.
Bear Lake Water Quality Sampling Locations/Data

- Maps of all lake basin and inlet/drainage sampling locations will be in the lake study/plan. These locations are GPS marked for future reference and sampling events (to compare directly to baseline conditions)
- All data will be reported in tabular format or in graphical format if adequate historical data is noted using similar sampling methods
- Sediment data will be displayed in tabular format with map showing sampling locations
Bear Lake Zooplankton and Macroinvertebrates

- Map of Bear Lake sampling locations for both zooplankton and macros. Also list of all macro species found in bottom samples as well as list of zooplankton genera found.
- Description of importance of each of these to the health of the Bear Lake ecosystem.
Bear Lake Aquatic Vegetation Biovolume (April 19, 2017)
Bear Lake Aquatic Vegetation Biovolume (June 3, 2017)
Bear Lake Native & Invasive Aquatic Plants

- Maps of the locations of all invasive aquatic plant species (on land and in the water) will be created and the polygons delineated to show the area of the infestations for future treatment considerations.

- A tabular list of all invasive and native aquatic plant species will also be included along with photos of each aquatic plant.
Toxic Algae in Bear Lake: Microcystis
Bear Lake Invasive Species

Figure 6. Eurasian Watermilfoil (©RLS, 2006).

Figure 7. Curly-leaf Pondweed (©RLS, 2006).

Figure 8. Starry Stonewort (USGS photo).

Figure 9. Purple Loosestrife (©RLS, 2006).
What Happens if We Kill Too Much Vegetation or Do Not Reduce Nutrient Loads to the Lake?

Toxic Blue-green algae bloom, Spring Lake, Ottawa County, MI

Lake may not be able to break down plant matter fast enough
What Will Happen If We Do Nothing?

- EWM/invasives will displace native aquatic plant species
- Fishery will decline in quantity and quality
- Nutrient pollution will create inability to use lake/public health issues
- Property values will decline
Professional Recommendations

• RLS will make recommendations to improve the water quality (including increasing water clarity, decreasing nuisance algal blooms, and reduction of nutrients)
• RLS will make recommendations to manage the invasive species in/around the lake and to protect and preserve native species biodiversity
• RLS will make recommendations on engaging the local community for involvement in the lake management program