

HIDDEN LAKES ESTATES HOMEOWNERS ASSOCIATION

**TRIP REPORT
&
POND RECOMMENDATIONS**

Prepared By:

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HLE EXHIBIT 22

Scope and Recommendations:

I met with Sue Kraemer and the lake committee members representing Hidden Lakes Estates Homeowners Association on January 29, 2006.

There are two ponds each approximately 1.2 acres in size. The water supply during the summer months is San Juan Water District water.

Overall, I believe that the two ponds are in good shape. Because the pond water can be completely controlled, excellent pond management capabilities exists. Being able to control the water coming in and out allows us weed control if necessary, fish habitat manipulation, oxygenation of all depths of the pond and efficient water use.

I concur with the calculations that were done and listed in the pump house. With an estimated evaporation loss during July and August of ½ inch per day that would be approximately 30,000 gallons per day. These calculations are for evaporation only and not soil, or evapotranspiration losses of surrounding riparian vegetation.

Oxygen level is the single most important thing to monitor and maintain for a healthy productive pond. The goal should be to maintain a dissolved oxygen level around 5 ppm, this is needed for a healthy warm water pond. Because of this I would recommend that a DO (Dissolved Oxygen Meter) be purchased to monitor the DO levels throughout the year, especially through summer. This could help with reducing power cost of the recirculation system.

There is an old existing recirculation system that connects the upper and lower ponds. Two bubbling outlets at the upper end of the upper pond were observed. It was said that there are a couple more that are not working now, possibly because of 25 year old broken pipes. I recommend replacing the old pipe system and to place an outlet at each side of pond and at the ends where they currently are. The end of each extension should have a 15 degree up angle pointing in the same direction clockwise or counter clockwise. The outlet end should be at least a foot above the bottom to minimize sediment disturbance. This would help take the poorly oxygenated water off the bottom to the surface to oxygenate and create a small current of water going clockwise or counter clockwise within the pond to encourage better circulation.

The lower lake has a water fountain and one of the stagnant coves has some kind of aeration or recirculation outlet existing. The Landowners stated that it only works part of the time.

Overall the infrastructure for lake circulation exists, but needs some replacing and repairs. Be sure when redesigning and repairing for both lakes that there is good circulation to all parts of the Lake.

I also recommend that a float valve be installed to maintain the lake water levels. This valve would help water use efficiency by not wasting water that would otherwise flow downstream.

There are community access walkways around the majority of both pond sides.

Parts of the community areas are irrigated and have a Bermuda grass sod. The other areas have severe erosion problems, and should have a high priority for correcting. There are small gullies creating some hazards for walking on. The eroded soil also washes into the lake edges creating shallow areas for aquatic weeds to grow. The soil sediment itself is contributing to higher levels of nutrient rich water in the pond.

By planting sod on these areas they will act as a filter belt between the homes that fertilize and then have runoff into the pond.

These areas need to be planted to a sod cover. I would recommend establishing Bermuda grass as done at the lower pond community area. Bermuda grass would take a fraction of the water that normal lawn mixes require. It tolerates heavy foot traffic, and would have the lowest maintenance costs. (look at the lower pond areas) I would also do the bare areas along the road and lower lake waters edge.

Shape, smooth and create a seedbed for planting.

Install irrigation system around pond on the community property areas. Note: Irrigate community grass areas with the water out of the pond. This would allow for incorporating fresh water for pond flushing.

Trees could be planted at locations around the lake that would provide shade on the water during the afternoons during July and August. This will help with the surface evaporation and be healthier for the lakes. Be sure to plant the trees at least 10 or 15 feet back from the waters edge. This will allow minimal leaves dropping into the lake.

Water edges should be planted with low growing water edging plants. (Dwarf Bulrush, Dwarf Spike rush) Contact Sue Golden at "Golden Pond" nursery for a consultation and recommendations.

The existing rocked waterway connecting the upper and lower pond could be improved for water conservation and minimizes mosquito growing areas.

The center of the waterway could be dug out and a six inch trough installed with cement, plastic, or some other impervious material. This would channel the low summer flow for more water efficiency, and also eliminate a mosquito growing habitat. This should also encompass removing the middle concrete structure.

Be sure to contact the Placer County Mosquito Abatement District this spring and have them give you a few Mosquito fish to plant in both of your ponds. Many times they will

deliver and plant them for you. It only takes a few, and they will give you information on the fish.

Emergency spillway/overflow should be cleaned and operational.

Lakeside Guide:

The Association should select one employee to be in charge of pond management. There is more to good pond management than appears to be. Buy the "Pond and Lake Management Guide Book" by Steve McComas for him or her. This is the best management book I have ever seen. Have this person take my all day "Pond Management class" offered through Sierra College Community Education Department. See fall "Kaleidoscope" catalog for dates

I also recommend the Association provide a guide for lakeside living.

Go on the Internet and put in (King County Department of Natural Resources) or 1-206-296-6519. Go to Lakes and look at the 23-minute video titled "Lakeside Living". This could be a format to make your own video for homeowners.

The fertilizers and pesticides used on surrounding homes adjacent to ponds can contaminate them. This could harm the aquatic life and present a problem for fisherman who eats the fish caught from these ponds. I would maintain your catch and release program.

Proper placement of fertilizers and good irrigation water management practices minimizes or eliminates the potential hazard from adjacent lots. Ask that homeowners not fertilize within 15 feet of waters edge. Sprinkler nozzles along waters edge should be half size to minimize runoff into pond. Plant pond edges with low growing aquatic plants that stabilize shoreline and pull nutrients from the water. Contact Sue Golden at "Golden Pond Aquatic Nursery" 3275 Sierra College Blvd, Loomis CA 95650 (916) 652-5459 for a consultation. She is the most knowledgeable person I know concerning aquatic plants. Since the pond is very large, you would plant small areas of recommended shoreline plant and establish. These areas can then be the Associations own nursery stock available to lakeside owners.

Fish habitat recommendations:

Spawning beds:

Your DG soils provide excellent spawning areas. The fish will look for these warm water areas in early spring for spawning.

Structure:

Fish want different types of structure and not just a smooth muddy bottom pond.

Next to the spawning areas placement of large rock piles or brush piles will provide protection for newly hatched fry. The rocks should be approximately 12"-24" diameter or larger. The large rock provides different void sizes for the varying sized fish as well as habitat for crayfish and other aquatic life. The rock ridges or brush piles should extend from the surface to the bottom of pond, thus providing structure for fish at varying temperatures and oxygen levels.

Pond monitoring is recommended:

Evaluation of ponds at least three times per year: May, July, and September.

Check for:

1. Aquatic weed growth and try to prevent establishment. Mechanical tools can be purchased and/or constructed. (If detected early mechanical prevention can work.)
2. Water quality. Field water tests for aquatic life requirements should be done.
3. Dissolved Oxygen and other nutrients.

I am not against some spot treatment chemical weed control to bring nuisance vegetation under control. However, chemical treatments are only temporarily treating symptoms and not solving why plants are out of control. Many of these chemicals especially copper based chemicals will accumulate in the sediments over time. Copper being a heavy metal does not disappear and can rise to toxic levels. I would recommend that the Association's seek to have the ponds in balance with nature and minimal chemical usage.

Thank you for the opportunity to assist the Hidden Lakes Estates Homeowners Association.

Respectfully,

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