Holly Lake Ranch
Mr. Rob James
220 Holly Lodge Circle
Holly Lake Ranch, TX 75765

12 September 2011

Rob,

I conducted a site visit to treat vegetation and collect water chemistry data on September 8th from Lake Greenbrier at Holly Lake Ranch. Water chemistry parameters all fell within the desirable ranges this visit. From a fish and wildlife perspective the lake continues to look outstanding despite the record heat and lack of rain this year. Unlike many waterbodies in Texas no fish kill was experienced in Lake Greenbrier during the summer of records. There was some filamentous algae present, mostly dead, but in less quantity and in different areas than previously due to a three month southerly wind changing to a northerly wind a week prior to our arrival. The water is considerably cooler (77 compared to 91 degrees in August) and has begun to green up again as it was in the spring and early summer. Visibility was down to 50 inches, more than two feet less than last month. The planktonic algae bloom reduced light penetration into the water, and helped reduced the elodea and coon tail in deep water. Both species in many areas was greatly reduced due to treating and lack of sunlight, but in a few areas coon tail increased where we did not treat the previous visit in natural areas where it would not affect dock access.

Below are the results from water chemistry parameters tested at the three locations around the lake. Site one is out from the dam, site two was half way to three-quarters up the East Fork and the third was about the same distance up the West Fork. Dissolved Oxygen (DO) was good to 20 ft, with the remaining 10 feet below desirable, and unable to support fish for a very long period of time. Water temperature at the thermocline was 74 degrees and at the deepest spot (30 feet) it was 55° F.

The species of plants treated included filamentous algae, coontail and Egeria (Brazilian Elodea). A spray mix of Diquat and Hydrothol 191 was used to spot spray approximately 1.75 acres total along the shore mostly up the two forks is filamentous algae and in a few areas of the main lake body Elodea and coon tail. With the clearer water in August the Elodea and coon tail were growing at a faster rate, but between what we treated and the water visibility dropping from six feet to four coon tail and Elodea patches have drastically receded where treated. The growing season should end this month and the remaining algae mats will sink and Elodea and coon tail growth stopping. In November the visibility should greatly increase, but then recede again next March when the growing commences and the planktonic algae bloom returns.

I am not planning on coming back in October to treat again, unless you request it. I see no need to for you to spend additional funds with water temperatures receding and growth stopping for the year.

If you decide to continue with our services next year I suggest we use liquid copper to treat filamentous algae in the forks only, since that is where it is the most prominent and always will be an issue. Continue using the Hydrothol 191 and Diquat mix in the main lake body as filamentous algae, coon tail and surfaced elodea can all be treated with one mix. Continue spot treating the Elodea as it is observed with the granular Aquathol where under the surface and the mix where topped-out, as both methods are doing a very good job at keeping it in check. We should start the same time next year as it appeared to coincide with the growing season. We will use a higher pressure sprayer for algae with copper only (cannot mix any other herbicide with liquid copper) to hopefully reduce its presence in the

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problem areas. I suggest we make the contract for visits twice a month, knowing a couple months in the beginning and September will only require one visit and the middle months June July and August making three visits per month to deal with the filamentous algae. I know this increases the cost exponentially, but the algae will always be an issue, unfortunately due to current and past influences on the lake. Another option is setting up with individual land owners the physical removal of algae in front of their property. Although there is no guarantees this will work, as some properties no matter how well it is physically cleaned - wind, shoreline slope and depth, substrate composition and layout of shoreline they reside on can affect how fast it returns. It can return immediately after it is removed with a wind shift.

I am available to come out and meet with you and Russell to discuss this year and next year through Sept 23, but then I am headed to Florida to work on our research project and for other clients in the Southeast until approximately Oct 17th. November and December I am always open as that begins our down time for our business.

As always, thank you for your patronage and if you have any questions do not hesitate to E-Mail or call and I will get back with you as soon as I can.

Sincerely,

Scott Brown

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Big Lake Holly Lake Ranch
Out from Dam 9/8/11

- Sample Time: 8:20AM
- Air Temp: 55^{o} F
- Cloud Cover: 0%
- Wind Speed & Dir: Calm
- Water Temp Surface: 77^{o} F
- Water Temp Bottom (30 ft): 55.6^{o} F
- DO Surface: 7.2 mg/l
- DO Bottom (30 ft): 1.0 mg/l
- pH: 7.5
- Conductivity: 120 uS/cm
- Salinity: 0.06 ppt
- Ammonia: 0.2 ppm
- Nitrites: 0 ppm
- Alkalinity: 40 ppm
- Carbon Dioxide: 7 ppm
- Chlorides: 28 ppm
- Hardness: 32 ppm
- Visibility: 51 in
- Thermo-cline Depth: 20 ft

Big Lake Holly Lake Ranch
East Fork 9/8/11

- Sample Time: 8:35 AM
- Air Temp: 57^{o} F
- Cloud Cover: 0%
- Wind Speed & Dir: Calm
- Water Temp Surface: 77.5^{o} F
- Water Temp Bottom (6 ft): 77.4^{o} F
- DO Surface: 6.7 mg/l
- DO Bottom (6 ft): 7.7 mg/l
- pH: 7.7
- Conductivity: 111 uS/cm
- Salinity: 0.05 ppt
- Ammonia: 0.2 ppm
- Nitrites: 0 ppm
- Alkalinity: 36 ppm
- Carbon Dioxide: 6 ppm
- Chlorides: 36 ppm
- Hardness: 36 ppm
- Visibility: 56 in
- Thermo-cline Depth: None

Big Lake Holly Lake Ranch
West Fork 9/8/11

- Sample Time: 8:50 AM
- Air Temp: 58^{o} F
- Cloud Cover: 0%
- Wind Speed & Dir: N 6 mph
- Water Temp Surface: 77.7^{o} F
- Water Temp Bottom (10 ft): 77.4^{o} F
- DO Surface: 6.5 mg/l
- DO Bottom (10 ft): 6.1 mg/l
- pH: 7.6
- Conductivity: 114 uS/cm
- Salinity: 0.05 ppt
- Ammonia: 0.6 ppm
- Nitrites: 0 ppm
- Alkalinity: 32 ppm
- Carbon Dioxide: 8 ppm
- Chlorides: 36 ppm
- Hardness: 40 ppm
- Visibility: 49 in
- Thermo-cline Depth: None

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