September Lake Conway Data Analysis

Rainfall / Lake Level

NOAA predicted average rainfall last month and we got 6.41 inches. This was 107% of the 6.0" long term average for the month so we will call it even. At the end of the month the lake level was at 86.58 or a stage of 88% (a decrease of 10% from last month). The lake is still in the "high" range and is still about 1.0 foot above the average for the beginning of October. It is actually slightly below year's level for this date. NOAA is predicting significantly above normal rainfall conditions for the next 3 months. October is the month of the rainy season where the rainfall starts to decrease so we should expect the lake level to remain high again this month. Under normal rainfall conditions it is expected the lake will remain steady or fall slightly in the next 3 months. The chart shows a stable average for the coming months but it does not account for the fact the lake level is above the weir which is discharging strongly. The prospect of increased rain balanced against the high lake level will result in little change.
http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead01/off01_prcp.gif

This year's accumulated annual rainfall is 52.18 inches which is 5.05 inches more than we had by this time last year. Given the current NOAA heavy rainfall prediction and the rainy season in play we should expect the lake to remain above the weir this month. [Lake levels reported here and previously are based on NGVD 29 and will be revised to conform with NGVD 88 starting in 2016.]

The Effect of Weir Board Removal

Most of you are aware that three of the seven top weir boards were removed twice last month. That is shown on the chart by the white notches in the weir overflow line. If I have my information correct they were removed between 8/26 and 9/3 and again between 9/9 and 9/14 making a total of 13 days. It was recommended they be pulled about a month earlier to prevent the high spikes in the elevation but that did not happen. The first removal occurred at a time of significant rainfall and served well to minimize the spike in elevation caused by the 9/4 rainfall. Without a thorough analysis it is difficult to determine the actual effect but I would hazard it reduced the second peak elevation by about 0.1 to 0.2 feet.

The second removal was for a much shorter time and at a lower lake elevation during a time of lesser rainfall. Under these conditions one would expect the rate of lake level drop to increase but the rate remained virtually unchanged. This clearly indicates that the weir is not the full controlling influence on the rate of flow. I have pointed out in the past that the gap below the skimmer is narrower than the head on the weir when it is flowing at a high rate. The restriction caused by the skimmer limits the capacity of the weir thus reducing the effectiveness of removing boards. It has been observed, under high flow conditions, that the water level on the downstream side of the skimmer was as much as 3 inches below the water on the upstream side. This is a clear indication of the skimmer being a restricting force. The conclusion to be drawn from this is a simple weir calculation cannot be used to model the effect of the weir on the lake levels. Any modeling needs to account for the skimmer restriction also. This is not necessarily a bad thing. It just needs to be recognized when modeling.

Many folks unfamiliar with hydraulics worry the removal of weir boards will have a long term effect on the lake level. This is simply not the case. As long as any board removal is done well before the end of the rainy season and they are replaced before the lake level reaches the normal overflow elevation there is hardly any measurable long term effect. Looking at the trace of the lake level in August and September it is easy to see that when the lake level is well above the weir the slope of the dropping elevation line is steep. Below the weir (in other months) that line is much flatter. This means in the absence of rain the lake level will drop a half foot in about 2 weeks. Below the weir a similar half foot drop will take nearly 6 weeks, three times longer. This drop rate is even faster when the lake level is a foot above the weir. The result is that no matter how full the lake is above the weir it will drop to the weir level within less than a month in the absence of rain. After that the lake will respond to rainfall as it always has. As long as weir

board are removed and replaced before the level drops to the weir level and it is still raining normally the board removal is literally water “over the dam” and may be ignored in determining long term lake levels.

El Nino / Southern Oscillation (ENSO)

NOAA’s October 8th ENSO: Diagnostic Discussion reports an El Nino Advisory which is 95% likely to continue through the end of the year and into spring. This indicates a possibility of increased winter rainfall. There is little if any link between ENSO and Florida’s rainy season.
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.pdf

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Lake Temperature

The swimmers are out in force. Starting at 86 degrees the lake temperature has started its fall drop ending the month at 83. The average water temperature was essentially the same as this time last year. Let’s call it normal. The Amoeba season is coming to a close but caution is still due. More amoeba information may be found at: http://www.doh.state.fl.us/chd/volusia/eh/lab/pdf/amoeba.pdf

Hurricanes

The August 4th report, by the University of Colorado’s Philip J. Klotzbach and William M. Gray, indicates “below-average Atlantic hurricane season” due to the combination of a strong El Niño event and vertical wind shear in the Caribbean at a record high in July. It predicts the likelihood of hurricane events to be about 50% lower than the long term average. This was illustrated by the 2 tropical storms last month which were torn apart by wind shears and a 3rd on its way expected to meet the same fate.

http://tropical.atmos.colostate.edu/Forecasts/2015/aug2015/aug2015.pdf

If you would like to see an estimate of the probability of tropical storms hitting where you live check out this site. It is also produced by William Gray of the Colorado State University.
http://landfalldisplay.geolabvirtualmaps.com/ It is showing 0.4% chance of a named storm entering Orange County this year. Please bear in mind that it takes only one event to wipe out everything so be prepared.

Planting and Weed Control

If you are doing aquatic planting now it should be off shore in 6 to 12" of water. With the lake level at the 98% stage we will assume this is a fairly long term trend. We should still plant low to prevent the plants from being high and dry if the lake level drops next year. If planted too far out in the water they will not root well and could be washed out by wave action. When planting in the water it helps to have an offshore barrier of some sort to break up the waves to prevent them from being washed out by wave action before they root. Duck potato in less than 10" of water are easy meals for ducks. Yes, ducks do like duck potato for breakfast, lunch, and dinner.

To help us all enjoy a clear lake make sure you have maximized the number of aquatic plants on your shoreline. These plants help consume nutrients which run off from your yard and they provide habitat and food for fish and fowl. A sandy beach = a cloudy lake.

You might be inspired to attack some of that torpedo grass with a weed wacker. **DON'T DO IT!** That is about the worst way to control the weeds on your beach. It does not kill them. If you are doing any

lakeshore cleaning, please capture **all** of your cuttings. Sprigs of torpedo grass are very hardy and easily survive an excursion across the lake while growing a new set of roots. Once on the beach they immediately start to take over and choke out the beneficial plants. A single sprig will take root and in three months it will be a circle of healthy torpedo grass 10 feet in diameter. Considering it is likely over a hundred of these sprigs could float away from a weed wacking job, your efforts could easily seed another 1000 square feet of torpedo grass all around the lake. Respect your neighbors and capture weed bits.

[As an example on the weekend of 8/3/13 someone on the west to south west side of the middle lake wacked their torpedo grass and on 8/5 I fished out nearly a bushel of torpedo grass sprigs which had just floated in. Probably a half mile of shoreline is now planted with new torpedo grass. These get caught in our good weeds so we cannot see them then choke out the good plants in about a year. As long as people do not collect their trimmings it will be impossible to control torpedo grass.]

The best approach for controlling torpedo grass is with lake friendly herbicides. These may only be applied with the proper permit from Orange County Environmental Protection Division 407-836-1400 and Florida Fish and Wildlife Conservation Commission 407-858-6170. These permits are neither expensive nor difficult to obtain. The County allowed weed free area on any lot is a maximum of 30 and there is no grandfathering of larger cleared areas. In any event make sure you collect any and all weeds you remove from your beach.

Orange County Lakeshore Vegetation Removal Permit:

http://www.orangecountyfl.net/PermitsLicenses/Permits/LakeshoreVegetationRemovalPermit.aspx

County Lakefront Clearing Regulations

Orange County Code of Ordinances - Section 15-251 through Section 15-256

http://www.orangecountyfl.net/Portals/0/Library/Permitting-Licensing/docs/ArticleVIILakeshoreProtectionCode.pdf

Florida Fish and Wildlife Conservation Commission Permit page including links to the permit and regulations: http://myfwc.com/license/aquatic-plants/

NOAA current La Nina - El Nino Synopsis (with discussion):

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.pdf

Orlando Weather Averages by month http://countrystudies.us/united-states/weather/florida/orlando.htm

Live weather data on the north shore of the middle lake, updated by the minute, can be viewed at:

http://www.wunderground.com/swf/Rapid_Fire.swf?units=english&station=KFLORLAN51

Thank you for your help maintaining our lakes.

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