

ShoreScore Update

November 2015



Lake Sammamish Water Levels - What You Need to Know !

Over the last month residents along the shores of Lake Sammamish have seen more than a two foot rise in lake levels. Many docks were submerged and damaged, boats still on lifts were threatened with breaking lose, and tons of debris pounded shorelines.



Figure 1 - November 2015 High Water Impacts

Was this to be expected? Perhaps, but we believe the situation could have been mitigated.

The rise and fall of the lake's water level over the last month is shown in Figure 2, below.

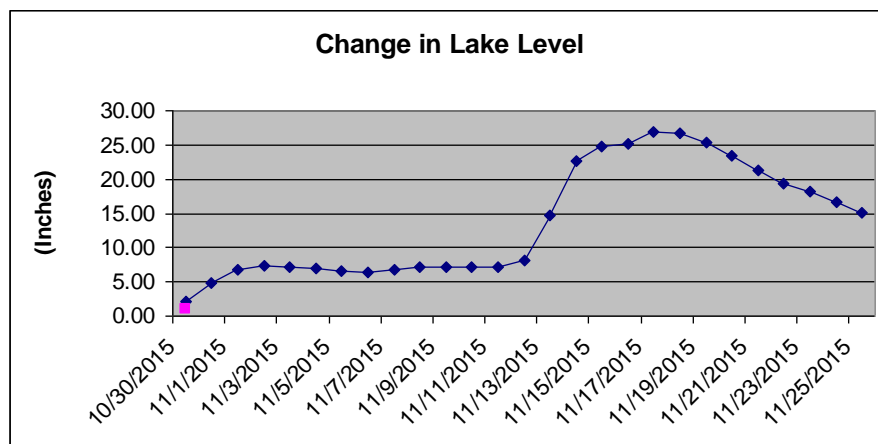


Figure 2 - November 2015 Water Level Change

Figure 3 shows the pattern of precipitation during the month. By comparing to Figure 1, you can see how quickly the lake rises when there is an inch or more of rain. But what is more damaging is that the lake level does not go down quickly when rainfall stops. (More on that below.)

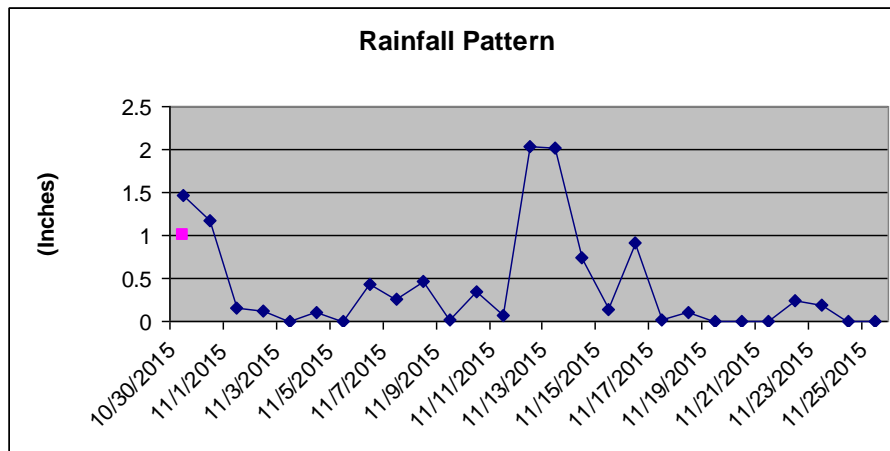


Figure 3 - November 2015 Rainfall Pattern (Location: Issaquah)

We saw the lake jump up nearly 2 feet in just 4 days. But, even with a dry spell of 7 days, the level dropped only a foot.

Left at a raised level, when another storm hits, as did this month, water levels shoot even higher.

The consequence to you? This pattern of raised levels shifts the Ordinary High Water Mark (OHWM) higher onto your property. Since this is your shore side property line, you have lost property (along with your other losses...).

There are two main "controls" of lake level - Inflow and Outflow. Where Inflows are concerned, we are at Mother Nature's mercy. But we attempt to manage rainfall flow through drainage management.

Historically, drainage from rainfall (which becomes lake inflow) has been controlled primarily with dams and detention facilities. In addition, new regulations are aimed at percolating as much rainfall as possible at the site (i.e., parcel) where it falls. So, the bottom line is that only the timing of when inflows arrive can be controlled.

What about Out Flow? WSSA maintains that the County has not managed this properly and has advocated on your behalf for increased maintenance of outflow.

There are two areas where maintenance needs to be increased. One is at Marymoor Park where the river passes over a small dam (a weir) and into a floodway called the Transition Zone (TZ). The second area needing increased maintenance is further downstream.

Figure 4-a shows the TZ flowing full. There are three sections - a low, stream like, center channel flanked by two outside channels. These outer channels are needed when lake levels rise above the top of the weir.



Figure 4-a - Sammamish River TZ Channels



Figure 4-b - Flow Blocking Sediment in TZ

As shown in Figure 4-b, sediment has been allowed to accumulate in the high flow channels. Also, these floodways are being obstructed by poorly maintained vegetation.



Figure 5 - Tree In River at Marymoor Entrance

Maintenance is also needed along the river at other points. Figures 5 and 6 show examples of the obstructions clogging the river downstream from the TZ.

The County accepted responsibility to maintain the river floodway, but failure to meet Federal standards led the Corps of Engineers to declare it non-compliant. They inactivated it in 2008.

IT NO LONGER PROVIDES THE INTENDED FLOOD PROTECTION!

The County claims the cost to correct these issues would be prohibitive and doing so would be detrimental to fish that utilize the flow blocking debris and growth for habitat. Clearly this approach could lead to flood situations downstream. But in the short term it definitely means lake residents are paying the price.



Figure 6 - Tree In TZ Floodway >

Shoreline Stabilization - Why we're hard on soft stabilization !

What Is Stabilization?

Many properties on our lakes were developed using bulkheads. These revetments provided protection against lake waters. Figure 1a and 1b, below, illustrate typical bulkhead configurations.

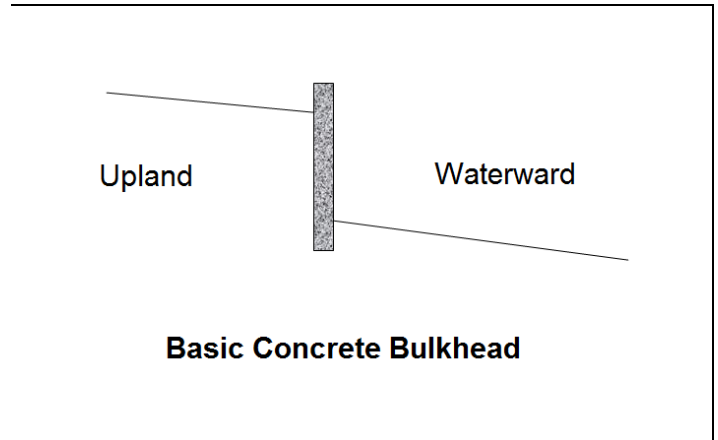


Figure 1a and 1b - Examples of Bulkhead Shoreline Stabilization

Why Do City Staffs Oppose Bulkheads?

Because strong wave action can have a negative, erosive effect on soil at their base, bulkheads are now discouraged. In addition, some also argue that these "walls" cut off a natural processes that take place along the shoreline - from above, down to the water. Upland (wild) animals can't easily access the shore and nutrient and plant "migration" is impacted, they argue.

With these factors in mind, staff in many jurisdictions, putting together SMP's (Shoreline Management Programs), have advocated for the use of "soft" stabilization. In the City of Bellevue, the draft SMP contains the following clause to describe its use -

Soft shoreline stabilization combines a range of bioengineered actions, beach enhancement, anchor trees, large rocks, gravel placement, shoreline plantings, and similar measures that use natural materials engineered to provide shoreline stabilization while preserving or mimicking important shoreline ecological functions. Depending on site conditions, a blending of hard and soft methods that includes durable components in combination with softer methods and vegetative plantings may be necessary to provide the needed level of stabilization while providing an enhanced shoreline habitat.

Can Bulkheads Be Used At All or Must They Be Torn Out?

Where an existing, legally developed property has employed a bulkhead to protect the primary (living) structure, Bellevue's proposed SMP (and those approved in other jurisdictions) would allow continuation of bulkhead use. However, for new development, including expansion within 50 ft. of the shore, a hierarchical approach to avoid bulkheads is required.

In Bellevue you would have to show there is no way to avoid the need for shoreline stabilization. Failing that, you would also need to consider "soft" stabilization before employing hard stabilization such as a bulkhead.

BUT, be alert - the above description pertains to Bellevue's draft SMP which has been more than 6 years in development. Should you want to make improvements near the shoreline, you will be faced with the City's much stricter Critical Areas Ordinance.

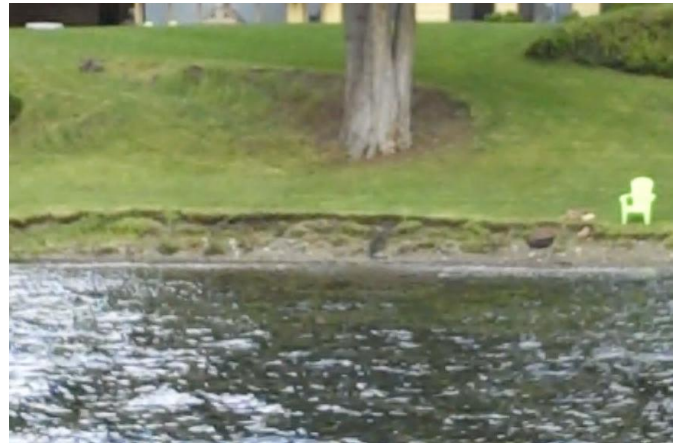
SO, WHAT'S WRONG WITH SOFT STABILIZATION?

Lake Sammamish and Lake Washington witness substantial wave action. These are not small lakes sitting in a remote area, nestled between wind-buffering trees. Both lakes have open water stretching up to 10 miles or more. Winds coming across this expanse can create waves, as can passing boaters. Combine this phenomenon with periods of high water and you have a recipe for damage to shoreline property if it's not appropriately protected. Figures 2a and 2b illustrate this pattern.



Figures 2a and 2b - Examples of Wave Fetch Impacting Lake Sammamish Shoreline

With these conditions often increasingly prevalent on and along our lake shores, soft stabilization should be avoided. Indiscriminant use of soft stabilization will result in issues such as those shown below in Figures 3a - 3d





Figures 3a - 3d - Example Consequences of Misuse of Soft Stabilization

Misuse of soft stabilization, where more traditional protection should have been used, can lead to one or more of the following:

- Near shore erosion,
- Debris - which clogs outflow floodways,
- Unnecessary pollution and introduction of sediments,
- Hazardous shoreline conditions,
- Property losses / damage, and more.

Note: care should be taken not to confuse upland rockeries with stabilization at the shoreline. One is a landscaping feature, the other a means of protection. And, adding a berm or rockery or other structure inside the 100 year Base Flood Elevation (BFE) is illegal, since this would infill the floodplain.

Is King County's Willowmoor Project at Marymoor Park the Long Term Solution?

King County began work on this project in 1999. Its completion is not anticipated until 2020. While many promises are being made that it will solve lake water level issues **CRITICAL MAINTENANCE IS NOT PART OF THE PROJECT** - just the opposite. Read more information about Willowmoor by [clicking here](#).

Your Support Is Critical !

We must convince the Corps of Engineers, King County and lakeside jurisdictions of the need for short and long term maintenance of the Transition Zone as well as returning the river to full flood protection status. In addition, we also advocate that residents need to be allowed to protect their docks (e.g., removing decking in winter months) and take other actions to protect their legally built improvements.

Help WSSA help you. Send a tax deductible donation to WSSA at P.O. Box 6773, Bellevue, 98008

Let us know if you're willing to **attend meetings** or **write to elected officials** or **become active on our board**. You can email us at: SensibleShorelines@gmail.com