June 2, 2014

Michael Paine
Development Services
P.O. Box 90012
Bellevue WA 98009-9012

Re: Proposed Updates to the City of Bellevue's Shoreline Master Program Regulations

Dear Mr. Paine:

I am sending this letter to you on behalf of the Lake Sammamish Kokanee Work Group (Work Group) in regard to the current efforts by the City of Bellevue to update its Shoreline Master Program (SMP) regulations. These updates are of interest to the Work Group given the implications of these regulations for lakeshore habitat conditions likely to contribute to the near- and long-term viability of the kokanee salmon population in the Lake Sammamish watershed.

The Work Group is an ad-hoc collaborative group formed in 2007 and is focused on the goal of preventing the extinction and improving the health of the Lake Sammamish kokanee salmon population such that it is viable and self-sustaining, and then supports kokanee fishery opportunities on the lake. The active membership in the Work Group includes representatives of the City of Bellevue and the other watershed local governments, the Snoqualmie Indian Tribe, the US Fish and Wildlife Service, the Washington Department of Fish and Wildlife, Washington State Parks, Trout Unlimited, Friends of Pine Lake, Save Lake Sammamish, additional entities, and residents of the watershed. Information about the conservation of Lake Sammamish kokanee salmon and the collaborative efforts of the Work Group can be found at: http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/kokanee.aspx.

Kokanee salmon (*Oncorhynchus nerka*) are native to the Lake Sammamish watershed and are closely related to sockeye salmon. They were of historical significance to both Native Americans and early settlers of the Lake Sammamish watershed. They live their entire life cycle in freshwater, in contrast to sockeye, which are born in freshwater, migrate to and live in the ocean for several years, and then return to freshwater to spawn. Kokanee spawn in Lake Sammamish tributaries and along portions of the lake shoreline from roughly November through March. Adults die within days after spawning, and their eggs incubate through the winter and hatch from roughly February through May. Kokanee fry emerge from the gravel and immediately migrate to Lake Sammamish to feed on zooplankton and insects. At the time of migration downstream to the lake, they are only one inch long. Due to their small size, they are very vulnerable to predation by fishes and birds. Three to five years later the fish reach a size of 12 to 18 inches and return to the stream of their birth to spawn.

Kokanee once ranged throughout the Lake Washington watershed, spawning in numerous tributaries to Lake Washington, the Sammamish River, and Lake Sammamish. Today, in the Lake Washington watershed, kokanee reside only in the Lake Sammamish watershed, and recently have been observed in several creeks along the west shoreline including Vasa, Idyllwood, Lewis, Schneider, and Tibbetts Creek. Kokanee returns once reached tens of thousands of fish, but in seven of the past ten years the returns have numbered fewer than 1,000 fish and in 2008 and 2010 the returns numbered fewer than 100 fish. Two of the three historic runs of kokanee have been extirpated, and a once popular kokanee fishery in Lake Sammamish is now closed. These are signs that Lake Sammamish kokanee salmon are verging on extinction and need protective and restorative measures.

Given the life-long residence of kokanee salmon in Lake Sammamish and its tributary streams, their health and survival are tied to factors within the watershed. Available information indicates that there are several known and probable causes for the decline of Lake Sammamish kokanee. Passage barriers (e.g., road culverts) are blocking access by kokanee to relatively significant areas of spawning habitat, even in small streams. Recent landslides influenced by anthropogenic activities have caused kokanee mortality. Issaquah Salmon Hatchery operations have historically directly reduced the abundance of kokanee, but due to management improvements these operations currently are not likely to be directly affecting the population. While catching kokanee in Lake Sammamish is prohibited by the Washington Department of Fish and Wildlife, there is documented unintentional catch of kokanee taking place. Due to their freshwater-only residence, kokanee are not declining as a result of environmental conditions in the ocean or the large, marine fisheries that affect some other Pacific salmon populations.

Altered stormwater runoff patterns may be causing loss of kokanee eggs and fry due to channel scour, fine sediment accumulations, and reduced connectivity to groundwater and hyporheic flows. Increased temperatures and decreased dissolved oxygen levels in Lake Sammamish make it harder for kokanee to find food and easier for the predators of kokanee to find them. Lake shoreline habitat that is steep and coarse (e.g., rip rap) disrupts important sediment distribution patterns and creates an environment favorable for predators such as rock bass, smallmouth bass, and the most numerous predator in the lake, prickly sculpin. A tracking study in 2008 and 2010 found kokanee using the Bellevue shoreline on a regular basis. Currently, kokanee have not been observed spawning along the Bellevue lakeshore itself, although they are observed spawning in Vasa Creek. The worsening of habitat conditions, especially in streams where kokanee currently spawn and the lake where they feed and find refuge from fry to adult life stages, will likely drive the kokanee salmon population closer to extinction.

The Work Group encourages the City of Bellevue to develop and adopt SMP updates that enable maintaining and supporting habitat conditions that will help conserve kokanee. Such updates would aid kokanee conservation if, for example, they helped avoid or minimized:

1. **the loss of native tree, shrub, and ground cover in close proximity to the lake and stream channels (Christensen et al 1996; France 1997);**
2. **the loss or alteration of shallow shoreline areas of the littoral zone that provide important nursery areas for juvenile salmonids (Sergeant and Beauchamp 2006);**

3. **the introduction of pollutants and excess nutrients (e.g., phosphorous) to the streams and the lake (Lehman et al. 2009);**
4. **bank hardening structures that reduce areas with fine sediment and sand that are important for juvenile salmonids, including kokanee (see Tabor et al. 2011; Poe et al. 1986);**
5. **changes to the hydrologic regime that would result in high, channel-scouring flows from November through May, when kokanee eggs are in the gravel and hatching out (sensu Lisle 1989);**
6. **increases in the amount of deep water predator habitat such as docks and piers (birds and smallmouth bass) and shallow water large rocks such as bulkheads (sculpin and juvenile bass) (Tabor et al. 2012; Poe et al. 1991); and**
7. **the disruption of natural processes of sediment delivery from tributaries and throughout the littoral zone of Lake Sammamish (Jennings et al. 1999) .**

The 2012-2013 return of kokanee, which included more than ten thousand fish, shows that current habitat conditions in streams and the lake can periodically support significant numbers of kokanee. The SMP update offers an important opportunity for the City of Bellevue, its landowners, and its residents to protect and capitalize on the current capacity of lakeshore areas and streams to support kokanee through all life stages. Recreating this capacity would be costly or impossible, and its loss would be a significant and potentially fatal blow to the kokanee population.

The Work Group appreciates the significant support the City of Bellevue has shown for the efforts to conserve kokanee salmon. These efforts are just beginning to bear fruit, with the 2012-2013 spawning run being the best in several decades and coinciding, for example, with a privately-funded culvert replacement that added approximately a mile of spawning habitat on a single Lake Sammamish tributary. These efforts need to be sustained and supported, and the investments of public and private funding respected and built upon, in order for the community to fully realize their economic, social, and ecological benefits. We are hopeful that the SMP updates will sustain and support these efforts.

Thank you for the opportunity to comment on these proposed updates. We look forward to continuing to work with the City of Bellevue and its residents to ensure that Lake Sammamish is healthy and remains an important asset to the community, to the local and regional quality of life, and to this and future generations. Working together, we and our partners will be successful in bringing our kokanee back to robust health.

Sincerely,

David St. John

On behalf of the Lake Sammamish Kokanee Work Group

cc: City of Bellevue Councilmembers
City of Issaquah Councilmembers

City of Sammamish Councilmembers
City of Redmond Councilmembers
The Lake Sammamish Kokanee Work Group

Citations

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