**FBRB FINAL APPLICATION QUESTIONS**

**GEORGE DAVIS CREEK FISH PASSAGE PROJECT:**

**10a - East Lake Sammamish Shore Lane**

**1. Project Type**

*Are you applying for a Planning or Restoration grant?*

The City of Sammamish (City) is applying for a Planning grant to fund the George Davis Creek Fish Passage Project (Project), 10a – East Lake Sammamish Shore Lane, design effort.

There are four significant fish-passage barriers near the mouth of George Davis Creek: 1) a culvert/pipe under East Lake Sammamish Shore Lane and private property, 2) a culvert under the King County Regional Trail, 3) a culvert under East Lake Sammamish Parkway NE (ELSP), and 4) a concrete weir in-line with the creek, approximately 400 feet upstream of ELSP. For the purposes of the Brian Abbott FBRB grant application process, the City of Sammamish is submitting separate applications for three barriers (the barrier under the King County Regional Trail is being excluded). All further references to “the Project,” will be referring to a project to only address the fish passage barrier under East Lake Sammamish Shore Lane (FPDSI: 920017 \_ FBRB ID: 10a).

**2. Total Requested Amount**

*What is the total requested grant amount? (Note: this must match the ‘Total PRISM Project Budget’ dollar amount in the ‘FBRB Cost Estimate Spreadsheet.xlsx’.)*

The City is requesting $294,000 from the Brian Abbott FBRB to fund the design efforts of the Project. This amount constitutes 85% of the total estimated design fee for the Project. The City is committed to matching these funds at 15%, or $53,500. The Brian Abbott FBRB grant is the first grant the City is pursuing on behalf of the Project; no other external funds have been secured at this time. A detailed price justification and breakdown is included in the Cost Estimate Spreadsheet.

The City is proposing to remove three fish passage barriers as a single, large project. Combining the projects will result in a more streamlined, efficient process instead of pursuing the projects independently. The anticipated cost estimate for a single, large project is approximately $650,000; lower than the sum of the three individual projects if they were completely independently from one another.

**3.** **Limiting Factors**

*Describe how the proposed project addresses limiting factors to salmon and steelhead productivity and life history stages within the watershed. Limit 500 words.*

Prior to placement of several successive, man-made migration barriers, George Davis Creek supported federally threatened steelhead, as well as coho salmon, cutthroat, and kokanee. Some resident cutthroat may remain but, with removal of these barriers, the creek is expected to support all of these species, including adfluvial cutthroat, throughout much of its length once again. Although George Davis Creek is not presently a primary spawning tributary for Lake Sammamish kokanee, kokanee spawners have intermittently returned to the short, lowermost accessible portion of the creek. This is significant because the Lake Sammamish kokanee population is critically diminished. The *Inglewood Basin Plan* (Parametrix 2010) identifies significant impairment of fish access to upstream habitat in George Davis Creek. Only about 100 feet of George Davis Creek is currently accessible to provide spawning habitat for kokanee and other migratory salmonids. This is in comparison to the roughly 4,200 linear feet of historically accessible habitat in George Davis Creek, which could be recovered as functioning habitat through the removal of fish passage barriers proposed. According to the recent *Ecological Survey of “Late-Run” Kokanee in Lake Sammamish* (King County 2016), “Restoring fish passage on George Davis Creek, while logistically very challenging, could provide "late-run" kokanee access to an additional, approximate 8% of the total potential, historic spawning habitats.” There are three fish-passage barriers (including the subject culvert) between the mouth of George Davis Creek at Lake Sammamish and the east side of East Lake Sammamish Parkway. In addition, a low concrete dam constitutes an additional barrier located approximately 400 feet farther upstream. All four barriers are now proposed for removal, which would restore historic access to roughly 4,200 feet of high-quality kokanee spawning habitat, as well as spawning and rearing habitat for steelhead, coho salmon, and cutthroat.

The best fish habitat in the basin extends upstream from East Lake Sammamish Parkway where the stream runs through a narrow, forested, spring-fed ravine. Large woody debris (LWD) is plentiful within the ravine with an estimated average spacing of one piece every 6 to 9 feet. Significant amounts of this wood were placed by King County during the 1990’s. The proposed project (along with three other now-proposed, concurrent fish passage correction projects) will allow for migration and spawning throughout this high quality habitat.

Soils along George Davis Creek are gravelly and highly infiltrative. Gravels are readily-recruited as a medium for spawning habitat. The soils are also highly erodible, which presents a risk of excess sedimentation associated with increasing development and peak flow rates in the basin. Where culverts are undersized, sediment can accumulate upstream, creating braided channel conditions without a passable channel. In addition to restoring full fish passage, the combined proposed culvert replacements and weir removal will also restore sediment transport dynamics. This will limit the risk of sediment barriers, and may provide a secondary habitat benefit of expanding shallow water conditions in Lake Sammamish at the creek mouth, which would benefit rearing habitat for federally threatened juvenile Chinook salmon.

**4. Level of Coordination**

*Describe the level of coordination of the proposed project with other recently completed or ongoing restoration projects within the watershed. Only describe projects within the same HUC 10, and completed since 2010 or funded for implementation by 2021. (Note: this can be any type of habitat restoration, e.g., large wood placement or floodplain restoration.) Limit 500 words.*

This project is part of a coordinated effort by the City of Sammamish and King County to restore fish passage to George Davis Creek. This project addresses the fish passage barrier closest to the mouth of George Davis Creek, which consists of a combination of a piped section of creek on two private residences along with an existing culvert under East Lake Sammamish Shore Lane SE. Together these form a continuously-piped section. This project will include close coordination with private homeowners on these two parcels to remove the fish passage barriers. Homeowners John Titcomb and Linde Behringer of 629 E Lake Sammamish Shore Lane, at the creek mouth, made a short section of the creek on their property fish passable in 2009. This culvert represents one of four fish passage barriers near the mouth of George Davis Creek, each of which are proposed for replacement, removal, or modification, as described below.

The next barrier upstream, approximately 15-feet upgradient from East Lake Sammamish Shore Lane NE, consists of two concrete pipes under the East Lake Sammamish Regional Trail (ELSRT). The ELSRT is owned and managed by King County. A major King County project to widen and improve the trail is currently in local agency permitting process. The culvert under the trail will be replaced with a fish passable box culvert when the trail is improved. Construction is scheduled to begin the summer of 2019 and be completed by 2021, and the project is funded through King County. The City of Sammamish is working with King County during the design phase of the trail project and will continue to work with the County during construction. The City of Sammamish conditioned approval of the ELSRT to indicate that the location of the culvert will be adjusted to align with the City’s preferred alignment based on its own culvert replacement projects.

The third fish-passage barrier is the culvert under East Lake Sammamish Parkway. The City is proposing to replace this culvert with a fish-passable box culvert under a separate FBRB application (FBRB 10b).

A fourth fish-passage barrier is a weir or low abandoned concrete dam upstream of East Lake Sammamish Parkway. The City is proposing to make the weir fish passable through either removal or modification under a separate FBRB application (FBRB 10c).

The City’s initial preferred alignment is to replace both culverts at or near their current location. Mr. Titcomb and Ms. Behringer are members of the Kokanee Work Group, and strong advocates for kokanee recovery. They have indicated a strong desire and willingness to cooperate with City plans to make George Davis Creek fish passable. The City has also independently hired an engineering consultant to conduct an alternatives analysis and initial (10%) design that will evaluate the stream channel alignment for fish passage in George Davis Creek. By addressing the barriers together, the City is ensuring that the cumulative outcome will be the most cost effective, sustainable, and ecologically beneficial possible.

**5. Project Scope**

*Describe the scope of the proposed project, and the goals and objectives. Describe how the project scope is appropriate to meet the identified goals and objectives. Include milestones and schedule. Limit 500 words.*

The goal of the project is to support the recovery of Lake Sammamish kokanee salmon and benefit other salmonids by restoring access to high quality spawning habitat that is currently inaccessible to salmonids. The objective of this planning project is to design and permit the replacement of the culvert under East Lake Sammamish Shore Lane NE and adjoining piped stream section with a fish passable design that simulates natural stream channel dynamics and is coordinated with replacement of fish passage barriers upstream.

This planning project will include completion of a topographic survey, geotechnical assessment, outreach to affected landowners and stakeholders, engineering design, and permitting. The City’s general preference is to replace the culvert system at or near its current alignment, but the alternatives analysis, which is presently occurring and funded by the City, will consider potential alternate alignments, property acquisition opportunities, and partnerships with local homeowners and King County. Prior to beginning the proposed fish passage design project, the alternatives analysis will identify the preferred replacement approach.

The proposed project will be hydraulically analyzed using the Hydraulic Engineering Center River Analysis System (HEC-RAS) program for the 2-year, 25-year, and 100-year discharges developed through peak flow modeling results using the Western Washington Hydrology Model (WWHM) with acceptable climate change modeling assumptions. Representative bankfull widths will be analyzed and surveyed. Experienced professional consultants will design the fish passage elements. City partners through the Kokanee Work Group, including Washington State Fish and Wildlife and King County fish biologists and Snoqualmie Tribe habitat specialists, will review and approve the design. Using the established Water Crossing Design Guidelines (WDFW 2013), the culvert replacement will provide fish passage that will be climate change resilient and adaptable, allowing for natural channel processes and dynamics to occur. These conditions are conducive to maintaining spawning gravel habitat over the long term.

Project success will be monitored immediately following construction to establish as-built baseline conditions and begin assessing the project’s effectiveness. Additional monitoring will be performed, at a minimum, at two and five years after construction. Variables measured will include revegetation performance, invasive species coverage, channel substrate, gradient, dimension, flow velocity and depth. This effectiveness monitoring will ensure the new culvert reaches are emulating natural stream conditions and providing the intended habitat conditions. The Kokanee Work Group has an ongoing fish-count monitoring program for other kokanee spawning streams in the area, which includes biologists and local resident reports. This program would likely be expanded to include George Davis Creek once migration barriers have been corrected.

In order to construct during the fish passage window during the summer of 2020, the following milestones and schedule are proposed.

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| Milestone | Schedule |
| Alternatives Analysis- 10 % design | February 1, 2019 |
| Survey and hydraulic modeling, 30% design | April 1, 2019 |
| Permit applications and construction easements | April 1, 2019 |
| Finalize grant agreement  | July 1, 2019 |
| 60% design | August 1, 2019 |
| 90% design | November 1, 2019 |
| Final design- construction bid set | March 1, 2020 |
| Permits received, easements recorded | April 1, 2020 |
| Construction bid | April 1, 2020 |

**6. Cost Effectiveness**

*Describe how the project is cost-effective in terms of cost and biological benefit. Limit 500 words.*

The City of Sammamish recognizes that restoring fish passage to George Davis Creek presents unique challenges due to the confluence of four distinct barriers, a high use arterial road, and substantial, private lakefront development. As such, the City has invested its own funds into a preliminary study and alternatives analysis. This analysis will evaluate project constraints and identify the most cost effective and ecologically beneficial outcome. Moving forward, the grant-funded phases of the project will benefit from the City’s investment in identifying and evaluating both constraints and opportunities.

The City of Sammamish is applying for grant funding to address three of the four related fish passage projects along lower George Davis Creek. King County is preparing to address the fourth, which is to replace a fish passage barrier on East Lake Sammamish Trail. The opportunity to replace all three of the lowermost barrier culverts concurrently allows for a wider range of potential alternatives than if each barrier were to be addressed independently. Once all four barriers are corrected (by the City and King County), over 4,200 feet of stream channel that is currently inaccessible will once again become accessible to migratory salmonid fish.

Considering the current perilously vulnerable condition of the Lake Sammamish kokanee population, restoration of spawning access to a currently inaccessible (but formerly accessible) stream is a critical element to support long-term viability of the kokanee population. Increasing the number of active spawning streams serves to improve the resiliency of the population. In any given spawning and incubating season, conditions may be far worse in a particular stream than in the others due, for instance, to a large landslide or significant pollution spill. Such events could all but wipe out the kokanee population in the affected stream for that brood year. However, with multiple streams in play, recolonization from the other, less affected streams can more readily occur. With recovery over time, the recipient stream in one year may wind up being a donor stream in years to come. The same principle applies to habitat for threatened steelhead.

**7. Contribution to Recovery Plan and Additional Supporting Information**

*Describe the proposed project’s contribution to an approved recovery plan, and provide any other relevant information you would like for the Board to consider in the evaluation of the proposed project. Limit 500 words.*

The removal of fish passage culverts near the mouth of George Davis Creek is identified as a Tier 1 project in the approved 2018 4-year Work Plan for the Lake Washington/Cedar/Sammamish Water Resource Inventory Area (WRIA 8). In addition to benefits to kokanee, by restoring sediment transport processes in George Davis Creek, the project is expected to contribute to the formation of a shallow water delta on Lake Sammamish. Currently, sediments are intercepted at the location of a high-flow bypass facility, on the east side of East Lake Sammamish Parkway, and exported from the system. The City intends to abandon the bypass and discontinue sediment removal, and hydraulic/hydrologic modeling will inform the feasibility of this action. Delta formation and expansion will have the ancillary effect of contributing to preferred rearing habitat for threatened Chinook salmon. The Lake Washington/Cedar/Sammamish Watershed Chinook Salmon Conservation Plan identifies restoration of the shoreline near Inglewood Hill Road and the restoration of the George Davis Creek mouth, which occurs in that vicinity, as Chinook salmon habitat projects (WRIA 8 2017).

Additionally, in response to a continual and precipitous decline in Lake Sammamish kokanee, local jurisdictions, government agencies, tribes, community groups, and watershed residents formed the Lake Sammamish Kokanee Work Group (KWG) in 2007 to help recover kokanee populations. In 2014, the KWG published the *Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries*, a strategic plan of priority near-term habitat restoration actions needed to move the native kokanee population closer to recovery based on latest science and monitoring. The Blueprint addresses two strategies to recover Lake Sammamish kokanee: 1) hatchery supplementation, and 2) habitat improvements to spawning tributaries. This project will address providing fish passage to potential, but currently inaccessible, spawning habitat on George Davis Creek.

The *Blueprint* states that the lower reaches of George Davis Creek contain three major culverts that impede fish passage under some or all conditions present during the spawning season. The *Blueprint* recommended a habitat assessment of George Davis Creek to evaluate the benefit of removing the fish passage barriers. The subsequent *Ecological Survey of “Late-Run” Kokanee in Lake Sammamish* (King County 2016) identified restoring spawning habitat quantity as one of five high priority actions to restore the viability of Lake Sammamish kokanee populations. The same document identifies the potential to increase the quantity of potential spawning habitat by eight percent through the removal of fish passage barriers on George Davis Creek.

The City supports implementation of fish passage improvements. The Sammamish City Council adopted the 2017 to 2022 Six-Year Stormwater Capital Improvement Plan, which identifies the George Davis Creek Fish Passage Project for design and construction in 2018 through 2020. The City is currently funding a preliminary study and alternatives analysis for the project. Additional funds will be allocated during the 2019/2020 bi-annual budget process and paid for through stormwater fees. Grants may assist with funding for design and construction.