

JAPANESE GULCH FISH PASSAGE DESIGN AND HABITAT RESTORATION

The City of Mukilteo selected the team of Confluence Environmental Company (CEC) and Natural Systems Design to address fish passage and habitat restoration on Japanese Gulch Creek. Funding is being provided via an Inter-Local Agency Agreement with Snohomish County Airport which has needs for habitat mitigation credits for development around the airport facilities. The original conception of the project was to address fish passage in a concrete junction box between two culverts. Between these two culverts, stream flow was spread over a concrete apron in a very thin layer that was a severe impediment to upstream adult fish passage. The original concept of the project was to dedicate the entire project budget to fixing this one issue on the stream. However, there were additional passage barriers upstream that would limit access to usable habitat should this initial barrier to passage be removed.

APPROACH

The approach was based on an overall assessment of the conditions in the lower part of the Japanese Gulch watershed. This allowed the team to place the proposed project elements into context and to assess fish passage challenges in several locations in the lower creek as well as habitat conditions in the stream. Mike McDowell served as senior aquatic biologist and conducted a habitat assessment in the lower and upper reaches of the stream. This included stream channel assessments of an existing and a historical channel. Scott White served as project manager and client liaison for this project. Kerrie McArthur and Ruth Park performed fish exclusion during construction.

CONCLUSIONS AND RECOMMENDATIONS

Working closely with our team members and the City of Mukilteo staff, CEC developed a plan to address the passage barrier in the junction box for a fraction of the initial cost projected by the City Engineer. This freed up project budget to address another upstream passage barrier in the form of a perched culvert. The team developed a cost effective solution to this barrier as well. In addition, the stream assessment identified a historical channel that CEC believes was abandoned 40 to 60 years ago. The team developed a conceptual design to move the stream from its existing heavily engineered channel (three concrete weirs and a concrete flume) back to its historical channel thereby bypassing three additional passage barriers and opening up more than twice the length of channel and habitat for future fish use.

Project Location
Mukilteo, Washington

Client
City of Mukilteo

Project Timeline
June 2009 to Dec 2010



Juvenile coho salmon – what it's all about.



Before: Raised culvert under railroad grade poses fish passage challenge.



After: Engineered fish ladder provides adequate fish passage for coho salmon.