

PRE-REHABILITATION PLAN

Highline Creek (Pend Oreille County)

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Westslope Cutthroat Trout (WCT) *Oncorhynchus clarki lewisi* are native to the Pend Oreille River watershed in Washington, but have declined in abundance and range. On March 20, 2013, the City of Seattle (hereafter Seattle City Light; SCL) was awarded a 42-year Federal Energy Regulatory Commission (FERC) license for operation of the 1,040-megawatt Boundary Hydroelectric Project (hereafter Project; FERC No. 2144), located on the Pend Oreille River in Pend Oreille County, Washington. The license stipulates that SCL shall implement measures under License Article 9 to protect and enhance fish and aquatic resources in the Project area, especially in support of native salmonid recovery in Project tributaries (FERC 2013). In consultation with Project stakeholders that comprise the Fisheries and Aquatic Workgroup (FAWG), formed to oversee implementation of license requirements, SCL developed a Fish and Aquatics Management Plan (FAMP; SCL 2010) to guide measures implemented under the current license. The presence of non-native fish species, particularly Brook Trout *Salvelinus fontinalis*, is a serious threat to persistence and/or recovery of native salmonids in the Pend Oreille Basin through interbreeding or competition for habitat and food resources (Andonaegui 2003). License Article 9(D) and FAMP section 5.4.2 describe measures for the suppression or eradication of non-native fish species in the Project area, including eradication through piscicide treatments (FERC 2013; SCL 2010). Cooperative efforts between Washington Department of Fish and Wildlife (WDFW), SCL, and the Kalispel Tribe of Indians Natural Resource Department (KNRD) are underway in Pend Oreille County to eradicate non-native fish from and restore native WCT to selected stream sections.

Highline Creek is a tributary to Sullivan Creek (tributary to the Pend Oreille River) in Pend Oreille County. Presumably inhabited by WCT prior to stocking, a portion of Highline Creek impounded by a historic log-crib dam was stocked with Brook Trout *Salvelinus fontinalis* in 1965 (WDFW unpublished data). Brook Trout became established and displaced the native WCT, which were eventually extirpated from Highline Creek. Due to the high density of Brook Trout in Highline Creek (R2 2014) it has likely functioned as a source population within the larger Sullivan Creek drainage.

Beginning in 2016, SCL initiated Brook Trout suppression efforts in the Upper Sullivan Creek sub-watershed (Walston 2017) to fulfill its FERC license mitigation requirements. In support of those efforts, Highline Creek was chosen as a WCT restoration watershed. Highline Creek is well-suited for WCT restoration due to the presence of a fish passage barrier to prevent reinvasion by non-native fish (historic log crib dam), excellent habitat, and a high density of non-native Brook Trout. Slimy Sculpin (native to the Sullivan Creek drainage) *Cottus cognatus* were documented in Highline Creek in 2016. Prior to management action, Sculpin were salvaged from Highline Creek with single-pass electrofishing on the entire project area and translocated to Sullivan Creek prior to the initial rotenone treatment in 2017. Rotenone treatment (rehabilitation) to remove non-native Brook Trout was conducted in September 2017, with a second treatment occurring in August 2018 (Baker and Walker 2018a; 2018b). Following non-native fish eradication in Highline Creek, it is anticipated that reintroduced WCT (translocated from Sullivan Creek) will establish a self-perpetuating population and re-occupy the project area. Following successful establishment of WCT, Slimy Sculpin will be collected from Sullivan Creek and restored to Highline Creek.

B. Physical Description of Water Proposed for Rehabilitation

1. WATER: **Highline Creek**
2. LOCATION: T39N, R44E, S29 and S30 Pend Oreille County
3. SURFACE ACRES: N/A MAXIMUM DEPTH: N/A
4. DISCHARGE: 1.25 cfs
5. OUTLET: Tributary to Sullivan Creek
6. STREAM: Yes. This is a tributary stream rehabilitation.
7. PUBLIC ACCESS: Yes
8. LAND OWNERSHIP: Public 100% (USFS)
9. ESTABLISHED RESORTS: None

C. Proposed Management Actions

1. WATER: **Highline Creek**
2. TARGET SPECIES: Brook Trout
3. DATE LAST REHABED: August 28, 2018
4. PROPOSED TREATMENT DATE: August 6, 2019
5. REPLANTING DATE: Estimated spring 2020
6. SPECIES: Westslope Cutthroat Trout (initial reintroduction) and Slimy Sculpin (once WCT are established)
7. CATCHABLES: N/A FINGERLINGS: N/A – Approximately 300 wild WCT, and approximately 150 Slimy Sculpin will be introduced to Highline Creek through translocation from Sullivan Creek.
8. PROPOSED TOXICANT: Rotenone, liquid and powder. CONCENTRATION: 1.75 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): 2 gal liquid and 20 lbs powder.
9. METHOD OF APPLICATION: Drip can, backpack sprayer, and rotenone/gelatin/sand mixture.
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel ~ 20

II. PURPOSE:

Historically widespread and abundant throughout the lower Pend Oreille River Basin, WCT have experienced significant constriction of range and abundance within the last 100 years. Removal of non-native Brook Trout followed by restoration of WCT in Highline Creek is consistent with WDFW's goal to "conserve and protect native fish and wildlife". This work would aid in restoring ecosystem function, provide source stocks of genetically pure cutthroat for the future, and act as a buffer against future petitioning of WCT under the Endangered Species Act (ESA). In addition, Highline Creek likely acts as a source population contributing Brook Trout to Sullivan Creek, hindering FERC mitigation (mechanical Brook Trout suppression currently occurring in mainstem Sullivan Creek) required of SCL for operation of Boundary Dam.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

This project has three objectives:

1. Salvage Slimy Sculpin from the Highline Creek treatment area and translocate them to Sullivan Creek.
2. Eradicate non-native Brook Trout from Highline Creek and its tributaries above the log crib dam.
3. Re-establish self-sustaining, healthy populations of WCT and Slimy Sculpin in Highline Creek and its tributaries above the log crib dam.

Objective 1 was achieved by translocating 37 Sculpin from the project area to Sullivan Creek prior to the initial treatment. Sculpin were collected via single electrofishing effort throughout the Highline Creek project area, held overnight, and transported to Sullivan Creek within 24 hours. Objective 2 will be achieved when non-native Brook Trout are completely removed from the project area. Follow-up environmental DNA (eDNA) sampling will be utilized to confirm eradication of Brook Trout. Reproducing populations of WCT and Slimy Sculpin, expanding both in population size and spatial distribution, would indicate completion of Objective 3. Achievement of Objective 3 may take multiple years.

IV. RESOURCE IMPACTS:

1. The population of the target species, Brook Trout, will be eradicated. Non-native Brook Trout compete with WCT for resources and must be completely removed to achieve project success.
2. Native Sculpin were observed in the treatment area, and identified as Slimy Sculpin by the WDFW Molecular Genetics Laboratory. Sculpin present in the treatment area were collected, enumerated, and translocated to Sullivan Creek prior to treatment. Following re-establishment of WCT, Slimy Sculpin will be collected from Sullivan Creek and restored to the treated section of Highline Creek.
3. Regional Lands, Habitat, Wildlife and Non-Game managers have been apprised of the proposed Highline Creek rehabilitation. No unmitigated concerns have been expressed on the potential impacts to non-targeted species.
4. According to Bradbury (1986), the effects of rotenone on benthos are variable, depending on the concentrations and species. Crustaceans are most tolerant while the smaller insects are most affected. Immediate reduction of populations averages 25%, and survival doubles when access to bottom sediments exists. Benthic communities generally recover to at least pretreatment levels within two months. Zooplankton is more severely impacted, and communities generally take two to twelve months to fully recover. While relatively tolerant of even heavy doses of rotenone, amphibians (especially larval) are at risk, and herptiles are affected somewhat less so. Almost no chance of eliminating an entire population exists.
5. Professional biologists and other naturalists have visited this site frequently over the past 50 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be impacted by the rehabilitation. The Highline Creek treatment area is located within the home range of the Salmo Pack of wolves *Canis lupus*, but the wolves are unlikely to be present in the area during treatment operations due to increased human presence, traffic, and activity in the days surrounding treatment.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Drinking water will be provided to landowners downstream of the project area (who use stream water for drinking) during the period of rotenone presence in the project area. Removal of the majority of dead fish is planned. Dead fish will be buried on USFS property. Additionally, water filtration may be supplied to downstream landowners who obtain drinking water from the stream if collection of fish carcasses is deemed insufficient to alleviate public health concerns related to bacteria from decomposing fish in the stream.

2. Summer rehabilitation will not interfere with spring nesting of waterfowl or spawning of adult/rearing of juvenile amphibians.
3. Livestock use of the waters to be treated will not be significantly affected. The concentration of rotenone used in the treatment will be far below that considered harmful to mammals or birds. The landowners will be notified of the rehabilitation and consequent exposure of livestock to rotenone.
4. No endemic, rare, threatened or otherwise listed species are known to inhabit this area. The Highline Creek treatment area is located within the home range of the Salmo pack of wolves, but the wolves are unlikely to be present in the area during treatment operations due to increased human presence, traffic, and activity in the days surrounding treatment.
5. Appropriate respirators and other personal protective equipment (PPE) will be utilized by staff involved with mixing and distributing liquid and powder rotenone per the product label and the American Fisheries Society Rotenone Standard Operating Procedure (SOP) manual.
6. The stream will be posted according to Department of Ecology guidelines to notify the public of the treatment and discourage the public from possessing or consuming dead fish.

VI. RECREATIONAL IMPACT:

Recreational use of the Highline Creek drainage is limited. Most Brook Trout formerly found in the treatment area were small in size (4-6 inches) and did not receive significant angling pressure. There are currently no/very few fish left in the project area. Westslope Cutthroat Trout will provide limited angling opportunity following re-establishment of the population, but fish size will also be small. Hunting, wood gathering, berry picking, and hiking likely occur on or near Highline Creek, but should not be adversely affected by the treatment.

Angling will be impacted by the change in species, as Highline Creek is managed under Washington Department of Fish and Wildlife (WDFW) special rules (Sullivan Creek and tributaries), including a standard stream fishing season (Saturday before Memorial Day – October 31), selective gear rules, provision for release of all Cutthroat Trout, and statewide harvest rules for other game fish. Statewide rules include no size restrictions or daily limit for Brook Trout.

VII. ECONOMIC IMPACTS:

Economic impacts will be limited for this project area. Angling pressure is very light in the Highline Creek project area, and contributes little to the local economy. Cost to WDFW to conduct the 2019 treatment should be similar to 2018 (\$57,384; Baker and Walker 2018b), but this project will be funded primarily through contracts with Seattle City Light (Federal Energy Regulatory Commission mitigation funds).

As noted previously, the re-establishment of WCT in Highline Creek is intended to provide some buffer against the listing of the species under the ESA. An ESA listing of WCT could impact area farming/ranching, logging, and mining operations, which comprise a portion of the Pend Oreille County economy.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6. for post-treatment fish reintroduction information. Following establishment of WCT, annual surveys will be conducted to monitor population abundance, spatial distribution, and genetic metrics.

IX. PUBLIC CONTACT:

Public meetings will be held during May 2019 in Pend Oreille County and Olympia to explain WDFW's 2019 rehabilitation proposals, assess public opinion, and address local concerns.

X. REFERENCES

Andonaegui, C. 2003. Bull trout limiting factors: For Water Resource Inventory Area (WRIA) 62 (Pend Oreille County, northeast Washington state). Report to the Washington State Conservation Commission, Olympia, Washington.

Baker, W. P., and B. M. Walker. 2018a. 2017 Post-treatment and discharge monitoring report for Highline Creek, Pend Oreille County, Washington. Washington Department of Fish and Wildlife, Spokane.

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Bradbury, A. 1986. Rotenone and trout stocking. Washington Department of Game, Fisheries Management Division. Fisheries Management Report 86-2.

R2. 2014. Boundary Hydroelectric Project tributary management plan. License article 404; Prepared for Seattle City Light. Redmond, Washington.

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Walston, J. 2017. 2016 Sullivan Creek Headwaters Subwatershed report - Sullivan Creek non-native fish suppression project. Submitted to Seattle City Light, Boundary Hydroelectric Project (FERC # 2144). Kalispel Tribe of Indians, Usk, Washington.

Initiated by: Region 1, District 1 Fisheries Management