

## **Alaska Sustainable Salmon Fund Statement of Work**

**I. Project Title:** Resurrection Creek Salmon Habitat Restoration

**II. Project Number:** 55005

**III. Principal Investigator**

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**IV. Project Period:** 3/1/22 – 11/30/24

**V. AKSSF Objective:** Instream restoration      **PCSRF Objective:** HP&R

**VI. Project Description**

1. Synopsis

The hydraulic and heavy equipment placer mining on Resurrection Creek a century ago resulted in loss of soil and significantly altered the natural complexity of its stream channels. The National Forest Foundation (NFF), U.S. Forest Service (USFS) Chugach National Forest, and Trout Unlimited (TU), with support from Kinross Gold Corporation, will conduct instream habitat restoration on approximately 1.6 kilometers of Resurrection Creek, increasing habitat complexity through increased floodplain connectivity, side channel habitat, channel sinuosity, pools, woody debris, spawning habitat, and vegetated riparian areas.

## 2. Introduction

Resurrection Creek, located on the northern end of the Kenai Peninsula near Hope, Alaska, in the Seward Ranger District of the Chugach National Forest, supports all five species of North American salmon, Dolly Varden, and rainbow trout. Fish distribution has been identified up to river kilometer (RKM) 30.5, with the lower 10.1 km identified as critical habitat for spawning and rearing of coho, chum, pink, and Chinook salmon.

From the early 1900s through 1942, hydraulic and heavy equipment placer mining affected nearly 10 km of this critical habitat. The direct impact of disturbance and loss of the stream's ability to access the floodplain have adversely altered aquatic habitat and riparian vegetation composition. Tailings generated from hydraulic mining occupy the majority of the alluvial valley bottom within the project area. These tailings have disconnected or buried the historic complexity of stream channels and wetlands that provided high quality habitat for salmon, bears, bald eagles, moose, and other fish and wildlife species.

The Resurrection Creek Phase I Project on RKM 8.0-9.3 was implemented in 2005 – 2007, which included: rebuilding the main channel and floodplains with increased sinuosity; construction of pools, glides, and riffles; installation of large woody debris within the new stream channels; construction of side channels and ponds; and revegetation of the riparian areas.

The Phase II project area begins at RKM 3.4 and extends to RKM 6.4, located within the Hope Mining's Company's block of federal mining claims and a designated 0.15 square kilometer restoration corridor. This project will restore Area 1 of the Phase II project area (RKM 4.8-6.4), rebuilding the degraded stream channel and floodplains by increasing sinuosity, constructing pools, installing logs and root wads in the new stream channels, constructing side channels and ponds, and revegetating the riparian areas. This work will restore natural stream channel processes and improve production and retention of nutrients, macroinvertebrates, and aquatic habitat which can lead to increased aquatic rearing habitat, larger and more robust juvenile Chinook and coho salmon, and improved populations of fish.

## 3. Location

Area 1 of Phase II: From RKM 6.4 (60.8720, -149.6321) to RKM 4.8 (60.8824, -149.6342) including 60.879137, -149.635819

## **VII. Objectives**

Restore the degraded stream channel and riparian areas in Area 1 of the Phase II section of Resurrection Creek; specific metrics include:

- increased flood prone width to bankfull width ratios (entrenchment ratio) from 1:1 to  $\geq 4:1$ ,
- decreased channel thalweg slope from approximately 1.5% to 1.3%,
- increased channel length by 25% and sinuosity from 1.1 to 1.3,

- increased pools with residual pool depths >0.9 m from approximately 3 pools to greater than 6 pools per km,
- increased salmon spawning habitat,
- increased large instream wood from approximately 10 pieces to approximately 200 pieces per RKM,
- increased perennial side channel flow from <1% to 5-20%,
- restored topsoil and fines to > 80% of the active floodplain,
- increased floodplain coarse woody material from approximately 16 pieces to 120 pieces per acre, and
- restored riparian tree species composition.

### **VIII. Methods**

The methods described for this project have been used with success on similar projects by the USFS in Alaska, including the Resurrection Creek Phase I restoration project just upstream. Restoration activities include the following components:

- 1) A temporary bridge will be installed across Resurrection Creek for safe heavy equipment use on both sides of the stream during restoration activities.
- 2) Trees and root wads will be harvested for the construction of engineered log jams and bank stabilization. Selective tree removal of spruce, hemlock, and cottonwood will occur on Hope Mining Company claims outside of the restoration corridor. Recent spruce bark beetle-killed trees will be targeted. Additionally, some previously stockpiled wood from Hope Mining Company activities on site will be utilized.
- 3) Approximately 92,000 cubic meters of existing placer mine tailings within the project area will be mechanically distributed to recontour the floodplain and recover floodplain elevations and widths. These actions will increase average flood prone width and bankfull width ratios from 1:1 to 4:1 and will allow flood flows access to the historic floodplain and newly created off-channel fish habitat within the restoration corridor boundary.
- 4) Tracked excavators, dozers, and other heavy equipment will be used to construct a new meandering pool-riffle channel approximately 2 km long to mimic a naturally formed channel and reestablish a self-sustaining aquatic and riparian ecosystem. Segments of the existing channel will be used as part of the new channel wherever feasible. New channel segments will be constructed to final grade “in the dry” before diverting water into the new segment. After new channel segments are completed, “push up” dams composed of native boulders and substrate will be constructed to divert water into newly constructed channels. By creating the new meandering channel, stream channel length will be increased by approximately 0.4 km, channel gradient will be decreased by 1.3% to 1.1%, and channel sinuosity will be increased from approximately 1.1 to 1.3. The following aquatic habitat features will be constructed in the restored channels:
  - i. residual pools (increase from less than three pools to greater than six pools per km),
  - ii. rock structures,

- iii. rock and log structures (increase of large instream wood greater than 30 cm in diameter and 12 m in length from approximately 10 pieces to approximately 200 pieces per RKM),
  - iv. log jams,
  - v. spawning areas consisting of shallow gravel beds (greater than 1,240 square meters per km), and
  - vi. approximately one kilometer of new side channels and a little under 5 acres of ponds in floodplains and in areas of the abandoned sections of the existing channel for off-channel habitat (side channels, wetland complexes, and off-channel rearing ponds will be designed and constructed to maintain 5% and 20% of the perennial flow).
- 5) Nutrient-rich, weed-free soils and organics will be placed on the newly constructed floodplains and riparian areas to improve growing conditions for native plant communities. Replaced soil will come from already-stockpiled soil on site as well as from proposed Hope Mining Company operation areas that have adequate soil depths (greater than 15 cm), ensuring enough soil remains on site for mining reclamation. As needed, soil may be procured from other sites outside of the project area. Floodplain course woody material will be scattered across the floodplain.
- 6) Floodplains and riparian areas will be revegetated, either through planting native species from local nurseries or by natural revegetation, to create a mosaic of vegetation of different species and ages.

## **IX. Benefits**

This project will: reestablish natural self-sustaining ecosystem functions on 1.6 km of Resurrection Creek, increase its climate resilience, and improve salmon habitat through floodplain connectivity, increased spawning habitat, and increased stream complexity (including log jams, pools, and restored sinuosity). Increased populations of salmon in Resurrection Creek will benefit the subsistence fishery at its mouth.

## **X. Products, Milestones, and Timelines**

*Pre-project costs are funded separately.*

### **2015**

- Decision memo and NEPA process

### **2020**

- Temporary bridge site survey and LIDAR acquisition

### **2021**

- April – May: Temporary bridge design and purchase
- June: Temporary bridge permitting and contracting
- July-November: Tree harvest selection and prep
- August – December: Stream corridor design completion (CAD surface creation, Hydrologic Engineering Center's River Analysis System 2D hydraulic modelling)

## 2022

- January – March: Stream restoration corridor permitting
- May – September: Temporary bridge installation, tree harvest and stockpile, and floodplain manipulation and prep
- October – December: Stream restoration corridor construction contract awarded

## 2023

- May – July: Instream restoration corridor construction (upper half of Project Area 1)
- July-September: Restoration corridor floodplain development topsoil placement, revegetation, and additional tree harvest and stockpile

## 2024

- May - July: Instream restoration corridor construction (lower half of Project Area 1)
- July-September: Restoration corridor floodplain development, topsoil placement, and revegetation

## XI. Project Budget

NFF Budget	Total
100 Personnel	\$15,000
200 Travel	\$0
300 Contractual	\$399,575
400 Supplies	\$0
500 Equipment	\$0
Subtotal	\$415,575
Expenses subject to indirect	\$15,000
600 Indirect	\$3,750
Total	\$418,325

### Budget Narrative:

#### Line 100: Personnel (\$15,000)

NFF staff (TBD) will coordinate with Forest Service staff on project development, manage the procurement process, oversee contract administration, and assist in communicating the progress and benefits of the project: 428.57 hours @ \$35/hour = \$15,000.

#### Line 300: Contractual (\$399,575)

- Contract to harvest, haul, and stockpile of up to 700 trees (with the majority having root wads attached): \$120,000
- Partial payment of the restoration contract including floodplain and instream work: \$279,575

#### Line 600: Indirect (\$3,750)

NFF's federally negotiated indirect cost rate through September 30, 2024, is 25% on direct salaries and wages.

## **XII. Match Budget**

<b>TU Match Budget</b>	<b>Total</b>
100 Personnel	\$23,223
200 Travel	\$0
300 Contractual	\$120,000
400 Supplies	\$0
500 Equipment	\$0
Subtotal	\$143,223
Expenses not subject to indirect	\$120,000
600 Indirect	\$3,191
Total	\$146,414

### **TU Match Budget Narrative:**

#### **Line 100: Personnel (\$23,223)**

- Austin Williams will provide project management and partnership coordination: 184 hours @ \$66.40/hour = \$12,200.
- Eric Booton will provide community engagement and outreach: 96 hours @ \$41.73/hour = \$4,006.
- Marian Giannulis will provide communications and media support: 120 hours @ \$52.30/hour = \$6,276.
- Nelli Williams will provide administrative support and staff management: 10 hours @ 74.10/hour = \$741.

#### **Line 300: Contractual**

Partial payment of the restoration contract including temporary bridge construction (2022) and instream restoration (2023): \$120,000

#### **Line 600: Indirect (\$3,446)**

TU's federally negotiated indirect cost rate through March 31, 2022, is 13.74% on total direct costs excluding capital expenditures, water lease payments, the portion of each subaward in excess of \$25,000, and other distorting items.