

Alaska Sustainable Salmon Fund Statement of Work

Revision #1: Revise end date to 11/30/23

I. Project Title: Instream Flow Protection: Nome Area

II. Project Number: 53014

III. Principal Investigator

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IV. Project Period: 3/1/2020 – 11/30/2023

V. AKSSF Objective: 1A-1 **PCSRF Objective:** P&A

VI. Project Description

1. Synopsis

This project will quantify and protect instream flows for important salmon-producing rivers in the Nome area. Activities include hydrologic data collection and preparation of reservation of water applications for the Sinuk River, the Penny River, the Nome River, and the Solomon River, among others. Important subsistence fisheries will be benefited by legally reserving instream flows needed to attain long-term protection and conservation of fish populations and their habitats.

2. Introduction

The rivers of Alaska support some of North America's most productive sport, commercial, and subsistence salmon fisheries. Salmon migration, spawning, rearing, and ultimately production in these water bodies depend on sufficient seasonal quantities of water. The purpose of this project is to quantify and reserve instream flows needed to attain long-term protection and conservation of salmon habitat in rivers that are heavily utilized for subsistence around Nome.

To reserve and protect instream flows, this project will use the Alaska Water Use Act (AS 46.15). The Alaska legislature amended this Act in 1980 in recognition of the economic, social, and other benefits of retaining water in rivers and lakes. This amendment provides the opportunity for government agencies, as well as non-governmental, private sector, and public entities or individuals, to legally secure reservations of water. Alaska Statute (AS 46.15.145) and regulation (11 AAC 93.141-

147) provide the opportunity to maintain instream flow rates in rivers or water levels in lakes in perpetuity for a variety of purposes, including the protection of fish and wildlife habitat, migration, and propagation.

The main activities of this project include collecting, compiling, and analyzing the biological and hydrologic data needed to quantify the instream flow requirements of salmon in candidate water bodies and preparing reservation of water applications for filing and adjudication with the Alaska Department of Natural Resources (DNR).

Alaska water law is based on the doctrine of “prior appropriation”, giving the first appropriator of water from a given water source a priority of right over subsequent appropriators on a “first-in-time, first-in-right” basis. With an established water right (in this case, called a Certificate of Reservation), the permittee has a legal standing to assert that right against conflicting uses of water from others who do not have water rights or who are junior in priority. The priority date for reservation of water applications is based on the date they are accepted for filing by DNR. A Certificate of Reservation remains in effect in perpetuity unless DNR determines the purpose for which it was filed has changed or new information demonstrates that a lower amount of water would provide the same level of protection, at which time DNR can amend the reservation.

Under previous AKSSF projects, mainly focused in Southeast Alaska, over 115 reservation of water applications encompassing 64 waterbodies and 147 stream reaches have been completed and successfully filed with DNR (accepted as complete and given a priority date). Adjudications have been completed and Certificate of Reservations issued for 65 applications. This project will expand the efforts of the ADF&G Instream Flow Program to provide protections to waterbodies within the Norton Sound region.

3. Locations

This project will establish a network of discharge measurement stations on five to ten rivers and creeks that flow out of the foothills north of Nome. Priority will be given to streams that support the most subsistence use (i.e., Snake River, Sinuk River, Cripple Creek, Penny River, Nome River, and Solomon River). If time allows, discharge measurement stations may also be established on Washington Creek, Cleveland Creek, Arctic Creek, and Anvil Creek (Table 1).

- Snake River streamgage: 64.564, -165.511
- Sinuk River discharge measurement station: 64.719, -165.923
- Cripple Creek discharge measurement station: 64.677, -165.746
- Penny River discharge measurement station: 64.586, -165.667
- Nome River discharge measurement station: 64.547, -165.223
- Solomon River discharge measurement station: 64.564, -164.434
- Washington Creek discharge measurement station: 64.712, -165.887
- Cleveland Creek discharge measurement station: 64.654, -165.735
- Arctic Creek discharge measurement station: 64.637628, -165.718319
- Anvil Creek discharge measurement station: 64.551, -165.442

Table 1. Summary of proposed hydrologic measurement stations in the Nome area

Name	Station Type	Proposal
Snake River	Streamgage/Discharge Measurement Station	Historic USGS streamgage data in conjunction with current discharge measurements
Sinuk River	Discharge Measurement Station	Planned installation
Cripple Creek	Discharge Measurement Station	Planned installation
Penny River	Discharge Measurement Station	Planned installation
Nome River	Discharge Measurement Station	Planned installation
Solomon River	Discharge Measurement Station	Planned installation
Washington Creek	Potential Discharge Measurement Station	As time allows
Cleveland Creek	Potential Discharge Measurement Station	As time allows
Arctic Creek	Potential Discharge Measurement Station	As time allows
Anvil Creek	Potential Discharge Measurement Station	As time allows

Related Projects

N/A

VII. Objectives

- Obtain the biological, hydrologic, and other information needed to quantify instream flow requirements of salmon in priority waterbodies
- Prepare reservation of water applications to protect salmon habitat in priority waterbodies

VIII. Methods

Streamgaging

To collect the hydrologic data necessary for reservation of water applications, a streamgaging network will be established. A streamgaging network consists of an index streamgaging station that is operated continuously over a long period of time and an associated network of semi-permanent discharge measurement stations operated on nearby waterbodies that are hydrologically similar. The United States Geological Survey (USGS) operated streamgage #15621000 on the Snake River from 1965 to 1991, and mean daily flow data for that period is available at waterdata.usgs.gov. Instantaneous discharge measurements will be collected at the site of the streamgage concurrently with measurements at the discharge measurement stations. Data collected at the discharge measurement stations will be regressed against corresponding discharge values from the index streamgaging location. For sites with robust correlations, a twenty-five-year record of continuous streamflow data will be estimated (Klein 2013).

Discharge measurement stations will be installed and operated by project staff in accordance with standard sampling protocols developed by USGS (Rantz et al. 1982) and the Instream Flow Program (Klein 2013) and through consultation with USGS staff and other hydrologists as applicable.

Preparing Reservation of Water Applications

DNR Reservation of Water application forms will be prepared to comply with state law (AS 46.15.145) and regulations (11 AAC 93.141-147) and following protocols established by the Instream Flow Program. A blank reservation of water application form can be found at http://dnr.alaska.gov/mlw/forms/water/rsvr_app.pdf. Applications will include: maps and legal descriptions identifying the location of the waterbody to be reserved and gaging stations within the reservation reach, a description of inter- and intra-annual variability in stream flows, fish distribution and periodicity data (seasonal use of habitat for migration, spawning, incubation, and rearing) by species and life stage, and the requested flows to be reserved during specified time periods accompanied by supporting documentation that justifies and describes the data and analyses used to develop the requested flows.

Fish distribution and periodicity data by species and life stage will be compiled and summarized from the *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* and its associated Atlas, input from biologists from ADF&G and other agencies, and the scientific literature. Requested flows will be based primarily on flow duration analyses (Annear et al. 2004) combined with available fish use information. This approach provides a basis to mimic natural seasonal flows that fish are adapted to and depend upon (Estes and Orsborn 1986; Poff et al. 1997; Annear et al. 2004; Lytle and Poff 2004; Arthington et al. 2006).

IX. Benefits

The rivers that flow out of the foothills north of Nome into Norton Sound support productive salmon stocks that subsistence users in the Nome area rely on every summer. Salmon depend on sufficient quantities of water to meet their spawning, rearing, incubation, overwintering, and migration habitat requirements. This project will provide long-term habitat protection by legally reserving instream flows needed to conserve

salmon habitat. It is anticipated that at least five reservation of water applications will be prepared, protecting at least 121 river km of fish habitat.

X. Products, Milestones, and Timelines *Revised with Revision #1*

- August 1, 2020 – September 15, 2020: Establish discharge measurement stations and begin measurements
- September 15, 2020 – September 30, 2022: Visit discharge measurement stations to collect data monthly during the open water period
- November 1, 2022 – October 31, 2023: Submit reservation of water applications to DNR

XI. Project Budget *Not revised with Revision #1*

ADF&G Budget	Total
100 Personnel	\$0
200 Travel	\$25,200
300 Contractual	\$0
400 Supplies	\$5,100
500 Equipment	\$0
Total	\$30,300

ADF&G Budget Narrative:

Line 200: Travel (\$25,200)

Two staff will travel to Nome 15 times over three field seasons:

- Airfare: 30 tickets @ \$400/ticket = \$12,000
- Per diem: 30 days/person @ \$45/day x 2 people = \$2,700
- Lodging: 15 nights/person @ \$200/night x 2 people = \$6,000
- Vehicle rental: 30 days @ \$150/day = \$4,500

Line 400: Supplies (\$5,100)

- Dell rugged laptop: \$3,600
- Field supplies (e.g., waders, taglines, clipboards, batteries, tools): \$1,500

XII. Match Budget

ADF&G Match Budget	Total
100 Personnel	\$10,605
200 Travel	\$0
300 Contractual	\$0
400 Supplies	\$0
500 Equipment	\$0
Total	\$10,605

ADF&G Match Budget Narrative:

Line 100: Personnel (\$10,605)

Leah Ellis, Habitat Biologist II, will assist with data collection and preparation of reservation of water applications and review operational plans and ADF&G reports: 1.47 months @ \$7,237/month = \$10,605.

XIII. References

- Annear, T., I. Chisholm, H. Beecher, A. Locke, and 12 other authors. 2004. Instream flows for riverine resource stewardship, revised edition. Instream Flow Council. Cheyenne, WY.
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- Estes, C. C., and J. F. Orsborn. 1986. Review and analysis of methods for quantifying instream flow requirements. *Water Resources Bulletin*. 22(3):389-398.
- Klein, J. 2013. Surface-water data manual for the statewide aquatic resources coordination unit. Alaska Department of Fish and Game, Special Publication No. 13-05, Anchorage.
- Lytle, D.A., and N.L. Poff. 2004. Adaptation to natural flow regimes. *Trends in Ecology and Evolution* 19:94-100.
- Poff, N.L., J.D. Allen, M.B. Bain, J.R. Karr, K.L. Prestergaard, B. Richter, R. Sparks, and J. Stromberg. 1997. The natural flow regime: a paradigm for river conservation and restoration. *Bioscience* 47:769-784.
- Rantz, S.E., and others. 1982. Measurement and Computation of Streamflow. USGS Water Supply Paper 2175.