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June 9, 2020

To: Potential funding entities to support a continuation of aerial salmon counting on three Unalaska roadside drainages and McLees Lake *(UNFA, OC, Q-Tribe, City of Unalaska)*

Re: 2020 Project Proposal for Unmanned Aerial Salmon Counting

Aleutian Aerial LLC (Aleutian Aerial) is pleased to provide a proposal for data collection services to support aerial lakeshore sockeye salmon counting on three Unalaska roadside drainages (Morris Cove, Summer Bay, Unalaska), and McLees Lake. Aleutian Aerial utilizes small unmanned aerial systems (sUAS) to perform video collection for salmon counting. All data collection is performed by a FAA Part 107 certified remote pilot. Aleutian Aerial will provide all personnel and equipment for data collection for this project.

Background:
This project began in 2018 with funding from the Unalaska Native Fishermen's Association (UNFA). The goal was to perform aerial surveys to determine sockeye salmon escapement estimates on local streams. UNFA funded the data collection and the Alaska Department of Fish and Game (ADF&G) provided biologist support to analyze and report on the data. ADF&G supports using sUAS technology for this type of salmon counting.

In 2019, the project was continued with ongoing support from UNFA and additional support from the Ounalashka Corporation (OC) and the City of Unalaska.

In 2020, the goal is to continue surveying roadside drainages and also add McLees Lake to the project. In early 2020, ADF&G received grant funding from the US Fish & Wildlife Service – Office of Subsistence Management to operate the McLees Lake weir during salmon seasons 2020-2023. This presents a unique and valuable opportunity to pair drone survey data with highly accurate weir data, which has never been done before. There has been feedback from numerous biologists that pairing drone and weir data would help calibrate accuracy of the aerial drone surveys, therefore making drone survey counts in the absence of a weir (i.e. Unalaska's roadside drainages) more scientifically defensible. ADF&G has been consulted on this effort, is fully supportive, and has granted permission for Aleutian Aerial staff to utilize the McLees Lake cabin and skiff in support of drone surveys in August and September 2020.

Site Logistics:
Aleutian Aerial is familiar with the complicated site logistics of working in the Aleutian Islands. Based in Unalaska/Dutch Harbor, Aleutian Aerial is capable of taking advantage of flight weather windows and lighting conditions as they are presented by Mother Nature. This can provide a significant cost savings by reducing transportation, freight, housing, and per diem costs. Specific sites for this project include the nearshore waters of Unalaska Lake, Summer Bay Lake, Morris Cove Lake, and McLees Lake – aerial pictures attached.

Execution of Work and Schedule of Costs:

Aleutian Aerial has the financial and technical resources, capability, and in-house capacity to successfully perform this video data collection. Data collection using sUAS will be performed during a target window of August 8 to the end of September. Start timing is based on the last two years of drone surveys as well as 2012-2017 McLees Lake weir data showing 99% escapement being achieved by the last week of July. The primary sUAS used will be a DJI Inspire 2. The camera sensor and lenses have the capability of capturing 20-megapixel still images and 4K (60 frames per second) video. Flight heights are generally 50–80 feet above lake level with variable speed depending on the salmon volume encountered. Polarized lenses will also be used to aid in seeing individual salmon underwater. Flights start at the same point on the lakeshore each lap and travel the perimeter with the camera pointed 50-90 degrees down from horizontal depending on optimal visibility into the water. Generally, you can see the entire nearshore spawning area in one field of view. In areas where shallows extend far out from shore, flight height is increased and a grid pattern is flown using rocks or unique features on the lake bed to keep the biologist oriented and prevent double counting or missing fish.

The following rates are applicable to this project:

- Project execution including all field logistics, drone and support equipment, aerial media acquisition, quality check, and creation of deliverables for analysis by ADF&G biologists. As advised by ADF&G, this will include four (4) sets of data from each roadside lake (~5.2 shoreline miles per lap surveyed, total of ~20.8 shoreline miles surveyed for the project), taken at regular intervals during a target window of August 8 to the end of September (as allowed by Mother Nature). Daily weather monitoring and forecasting during the entire project period and collaboration with ADF&G biologists for data quality assurance.
  $15,200 (same price as 2019, approx. 10% reduction from 2018)

- 2020 Addition: All details as described above for three (3) sets of data from McLees Lake (~6.2 shoreline miles per lap surveyed, total of ~18.6 shoreline miles surveyed). Hiring of a field tech/visual observer/lake boat operator (1 individual), and commercial boat charters to/from Reese Bay to access McLees Lake.
  $11,000

  Project Total: $26,200

  Seeking multiple funding sources. Based on 4 contributing entities, this request to the City of Unalaska is $6,550.

Exclusions:
Any condition outside the control of Aleutian Aerial and any item of work not specified in this proposal.

Assumptions:

- Flight weather windows are out of the control of Aleutian Aerial.
- Aleutian Aerial will operate sUAS under FAA Part 107 rules in the Class G airspace in and around Unalaska/Dutch Harbor during data collection.
- Any land use permissions required (except for licenses/certifications related to flight operations) are the responsibility of the funding organizations.
- Image acquisition will be done using a camera sensor capable of recording 4K, 60 fps video, on a professional grade sUAS platform.
- Photo/video media deliverables will be in common formats and delivered on external hard drive to ADF&G in Kodiak.
- Aleutian Aerial agrees to process and deliver media to ADF&G during the course of the project so data quality can be reviewed.

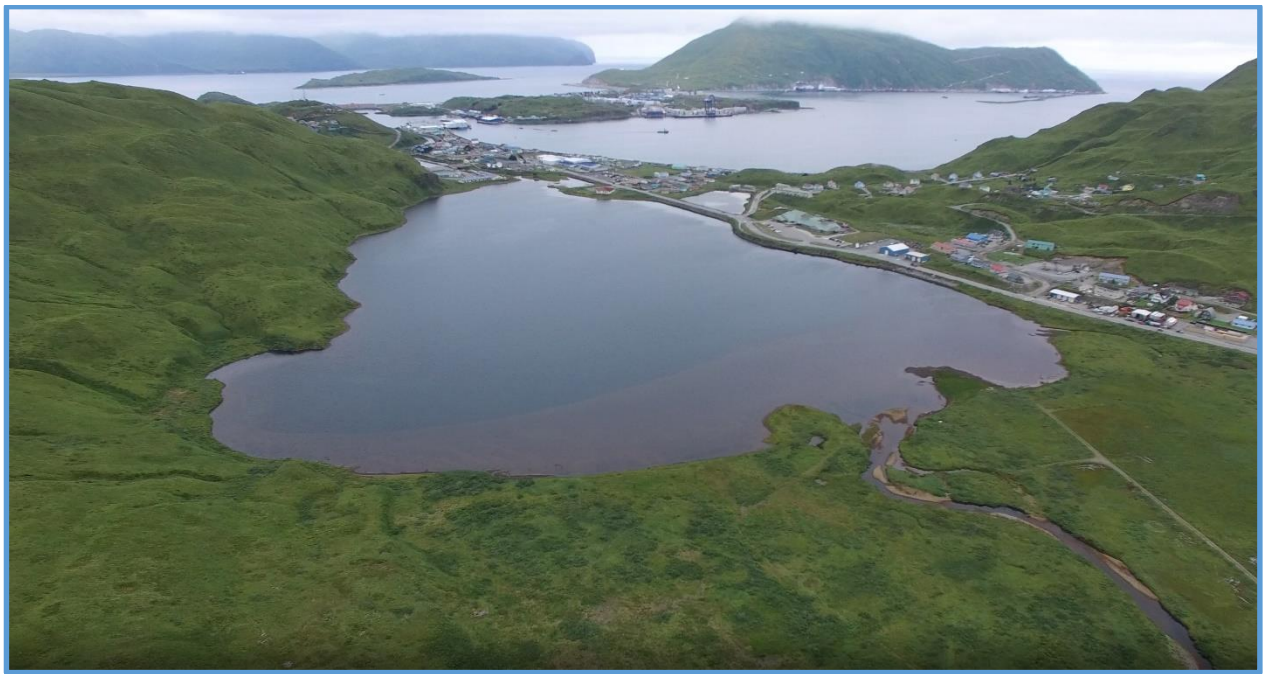
This proposal is offered and limited to the terms specified. Aleutian Aerial will hold this proposal open for 30 days from the date of the Proposal. Please feel free to contact me if you have any questions or comments regarding this proposal.

Thank you for considering Aleutian Aerial for data collection on Unalaska's salmon streams.

Sincerely,

Andy Dietrick
Owner, Aleutian Aerial LLC
andy@aleutianaerial.com
907.957.1680

Attachment #1: Unalaska Lake Overview



Unalaska Lake details:

Approximate length – 1.8 miles

Approximate width – 0.60 miles

Approximate perimeter – 1.8 miles

Attachment #2: Summer Bay Lake Overview

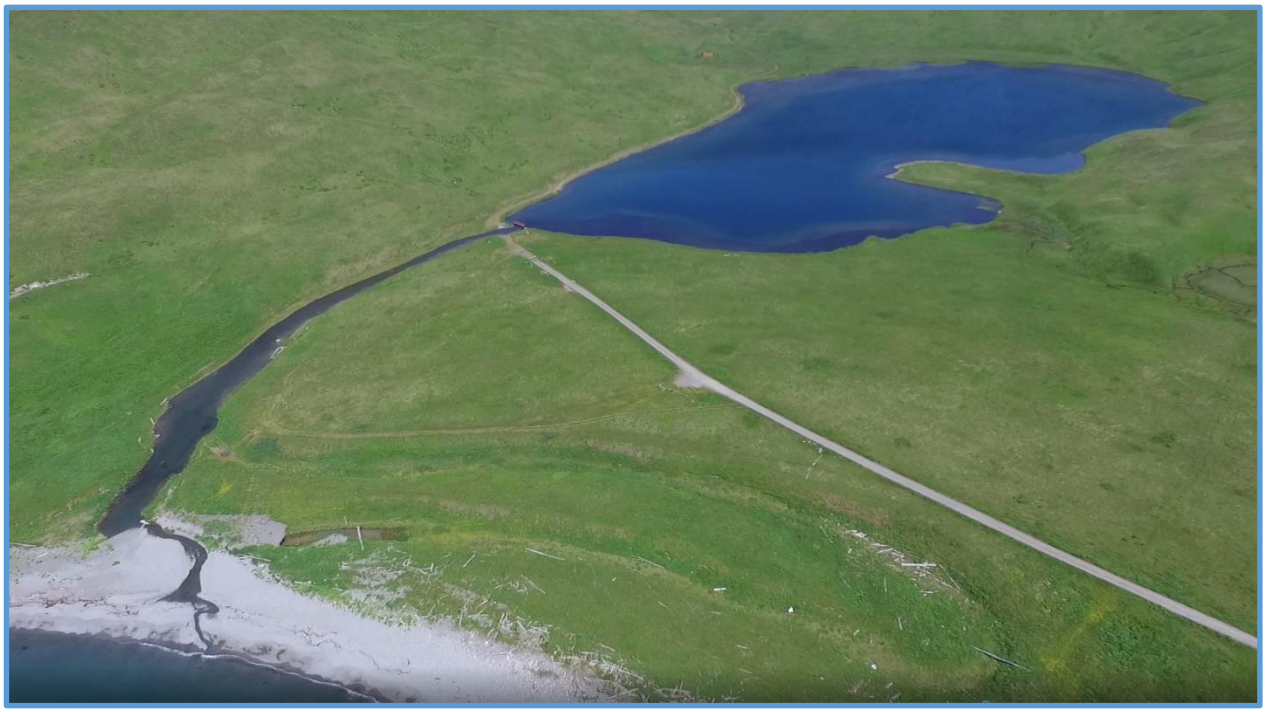
Summer Bay Lake details:

Approximate length – 0.85 miles

Approximate width – 0.30 miles

Approximate perimeter – 2.3 miles

Attachment #3: Morris Cove Lake Overview



Morris Cove Lake details:

Approximate length – 0.40 miles

Approximate width – 0.20 miles

Approximate perimeter – 1.1 miles

Attachment #4: McLees Lake Overview

McLees Lake details:

Approximate length – 2 miles

Approximate width – 0.85 miles

Approximate perimeter – 6.2 miles