MATANUSKA-SUSITNA BOROUGH INFORMATION MEMORANDUM IM No. 24-098

SUBJECT: INFORMING THE ASSEMBLY OF A GRANT AMENDMENT FOR TIME EXTENSION ONLY, FOR ALASKA SUSTAINABLE SALMON FUND GRANT #55008, BIRCH AND CROCKER CREEKS FISH PASSAGE IMPROVEMENTS PROJECT, TO BE PRESENTED TO THE BOROUGH MANAGER FOR SIGNATURE.

AGENDA OF: May 21, 2024

ASSEMBLY ACTION:

Presented to the Assembly. 05/21/24 - *emcv*

AGENDA ACTION REQUESTED: For information only.

Route To	Signatures
Originator – B. Sworts	Recoverable Signature X Brad Sworts Signed by: Brad Sworts
Department Director – T. Adams	5/7/2024 X Tom Adams, PE Signed by: Tom Adams
Finance Director	5/8/2024 X Cheyenne Heindel Signed by: Cheyenne Heindel
Borough Attorney	5/9/2024 X Nicholas Spiropoulos Signed by: Nicholas Spiropoulos
Borough Manager	Recoverable Signature X Michael Brown Signed by: Michael Brown
Borough Clerk	5/10/2024 X Estelle Wiese for Lonnie Mc... Signed by: Estelle Wiese

ATTACHMENT(S): Amendment 2 to Alaska Sustainable Salmon Fund Grant #55008, 9 pp

SUMMARY STATEMENT:

The purpose of this legislation is to inform the Assembly that the Borough Manager will be asked to sign an amendment for a time extension only, for the Alaska Sustainable Salmon Fund Grant #55008, Birch Creek at Mastodon Road Fish Passage Project, Project 30114-5500-5531, Fund 410. Currently, both the grant funds and the

associated matching funds are set to expire on November 30, 2024. This amendment will extend the project end date to November 30, 2025. The Borough's matching funds of $82,000 (Project 30114-1800-1831) will also be extended to November 30, 2025 once the amendment has been executed.

The project design for Birch Creek at Mastodon Road Fish Passage Project has not yet started and will not be completed in time for construction to occur in 2024 per the original time frame.

AKSSF Grant #55008 also includes Crocker Creek at Settler's Bay Drive Fish Passage Improvements project. The extension is being requested for the Birch Creek project only. The Crocker Creek project will be completed on schedule in the fall of 2024.

AMENDMENT ONE

To Subaward Agreement AKSSF-55008

Between
Alaska Department of Fish and Game, Alaska Sustainable Salmon Fund

And
Matanuska-Susitna Borough

For the project
Caswell, Birch, and Crocker Creeks Fish Passage Improvements

I. Scope of revision: The project scope is revised to remove the Caswell Creek at Hidden Hills Road culvert replacement and shift its funding to the Birch Creek tributary at Mastadon Road culvert replacement. The revised statement of work (attached) reflects this change including updates to the title (now *Birch and Crocker Creeks Fish Passage Improvements*), budget narrative, project description, objectives, timelines, and benefits.

II. Signatures:

For the Matanuska-Susitna Borough:

VWB — 9/12/22

Mike Brown, Matanuska-Susitna Borough Manager — Date

For the Alaska Department of Fish and Game:

DocuSigned by: 07F10851D8D74C9...

9/13/2022

Debbie Maas, Program Coordinator
Alaska Sustainable Salmon Fund — Date

DocuSigned by: BA9CC45DB0D049D...

9/13/2022

Brian Frenette, Assistant Director
Division of Sport Fish — Date

DocuSigned by: D2F69C89D91540F...

9/13/2022

Melissa Hill, Operations Manager
Division of Administrative Services — Date

Appendix A: Revised Statement of Work

I. **Project Title:** Birch and Crocker Creeks Fish Passage Improvements

II. **Project Number:** 55008

III. **Principal Investigator**

Alex Senta, Project Management Division Manager
Matanuska-Susitna Borough
Public Works Department
350 E. Dahlia
Palmer, AK 99645
907-861-7710
alex.senta@matsugov.us

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

V. **AKSSF Objective:** Fish passage **PCSRF Objective:** HP&R

VI. **Project Description**

1. Synopsis *Revised with Revision #1*

This project continues a partnership between the Matanuska Susitna Borough (MSB), the Alaska Department of Fish and Game (ADF&G), and the U.S. Fish and Wildlife Service (USFWS) to address priority fish passage barriers in the MSB. Sites were selected based on assessment data and prioritized by the extent of upstream habitat and the severity of the barrier. The selected projects on Crocker Creek and Birch Creek (tributary) will restore unimpeded access to 9.6 km of combined instream habitat for coho salmon, sockeye salmon, and Chinook salmon as well as 2.27 ha of lake habitat for coho and sockeye salmon.

2. Introduction *Revised with Revision #1*

Salmon and trout produced in MSB streams support commercial, sport, and recreational fishing industries and contribute in excess of several hundred million dollars to the Southcentral Alaska economy. The MSB is one of the most populous and the fastest growing areas in Alaska, averaging 3.4% population growth per year vs 1.2 % for the state as a whole. One consequence of rapid population growth is the rapid development of local road networks for access and transportation to residences, commercial centers, and recreational areas. During the 1970s through the 1990s many of these roads were built with little or no consideration of fish passage, and the MSB Public Works Department has been working since 2004 to restore fish passage throughout the Borough as well as ensuring that no new barriers are installed.

ADF&G identified and assessed over 580 road-stream crossing sites for fish passage throughout the MSB between 2009 and 2011 (AKSSF project #45878). In 2012, approximately 52% of these culverts were rated as Red, or likely barriers to juvenile fish passage, and a further 18% as Gray, or partial barriers. Those culverts impeded

access to an estimated 1,019 km of upstream habitat, including 344 km of catalogued anadromous waters and an estimated 2,671 ha of lakes. Since 2004, 113 barriers on MSB roads have been replaced with fish friendly structures by partners including the MSB, ADF&G, USFWS, and various non-profits and private landowners. This work has restored access to 158 km of instream habitat and over 2,428 ha of lake habitat as of January 2021. This project is a continuation of that work, and the MSB worked closely with ADF&G and the USFWS in its development.

Juvenile anadromous fish, such as Chinook, coho, and sockeye salmon, spend up to three years in fresh water during which they must move up- and downstream or between watersheds to access favorable habitat. Unrestricted access via stream corridors to spawning, rearing, and overwintering habitats is essential to maintaining salmonid production as well as healthy populations of resident trout and other fish. Movement of juvenile salmon and resident trout has been observed in response to a variety of environmental factors, including high and low flow events, changes in stream temperature, predation pressure, population densities, and the availability of food or shelter. Studies in coastal Washington streams documented the movement of juvenile coho salmon, steelhead trout, and coastal cutthroat trout and determined that movers grew faster than non-movers (Taylor and Love 2003).

The availability of overwintering habitat is often a factor that drives juvenile salmon survival, and a recently-completed multi-year USFWS study on juvenile coho movement throughout the Meadow Creek watershed (AKSSF projects #45883, #45892, and #44708) allowed MSB to select culvert sites that impede access to such habitat, providing direct benefit to species of interest (Gerken and Sethi, 2013). Most fish passage barriers in the MSB primarily affect the movement of juvenile fish but undersized culverts are often barriers to adults at low and high flow.

ADF&G has created a prioritization for culverts based on the severity of the barrier, the extent of upstream habitat, and the diversity of species using the stream (O'Doherty and Eisenman 2021). This "first-cut" prioritization was then refined by the partners to select the sites included in this project. Both culverts significantly impede the movement of juvenile salmon, but the culvert under Settlers Bay Road at Crocker Creek is a total barrier to fish passage including adult salmon. An attempt to install a fish ladder to provide passage has failed and the ladder collapsed in the early 2000s. Two former barriers downstream were replaced with fish friendly structures and this is now the most downstream barrier on Crocker Creek. There is a small unassessed culvert on a private trail located upstream and USFWS is working with the landowner to remove that barrier in 2022.

Birch Creek is an important tributary to the Susitna River that supports spawning populations of all five species of Pacific salmon as well as rainbow trout. The Mastodon Road site is located on a large tributary to Birch Creek. The culvert is located just upstream of the confluence and impedes access to over 6.5 km of pristine stream habitat and many hectares of wetland habitat in an undeveloped area with no other crossings or roads. ADF&G Fish Passage program staff found juvenile coho in this tributary in 2016

and it is now included in the Anadromous Waters Catalog. USFWS surveyed the site in the spring of 2020 and used its FishXing model to evaluate passage at the site, finding it is a barrier to juvenile fish at over 98% of fish passage flows. Fish passage flows encompass the range from estimated summer base flows to approximately ordinary high water or bankfull flows.

The MSB Assembly annually approves funds for stream crossing replacement projects. The MSB intends that this locally-derived funding be used to leverage additional funding to the maximum amount possible, knowing the need greatly exceeds their ability to provide funding derived from local taxes. This project will use those local funds, AKSSF funds, and secured funds from USFWS to improve fish passage at these sites.

The MSB Public Works Department will contract and the engineering and construction work and provide project management; USFWS and ADF&G will help review and approve designs, and ADF&G will provide post-project monitoring including monitoring fish use of newly opened areas and will collect and disseminate information on the projects to the public via the ADF&G Fish Resource Monitor website at http://gis.sf.ADF&G.state.ak.us/FlexMaps/fishresourcemonitor.html. The sites will be designed in 2022 and scheduled for construction in 2023 or 2024.

Figure 1. Site 20501156, located at the uppermost crossing of Crocker Creek on Settler's Bay Road, showing the perched and damaged culvert and collapsing fish ladder. This site is a total barrier to fish passage but salmon are recorded as using the upstream habitat prior to installation of the road and while the fish ladder was functional. Replacing this culvert and the fish ladder with a fish friendly structure and reconstructing the downstream channel will allow sockeye and coho salmon to return to habitat they are currently extirpated from.

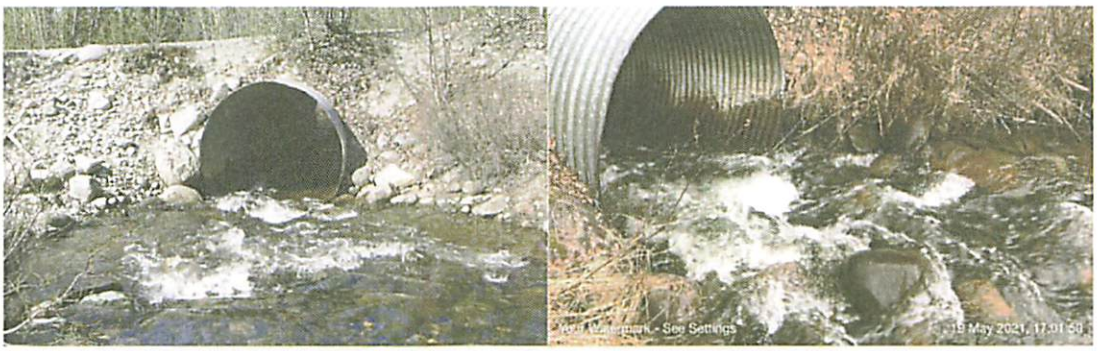

Figure 2. Site 20501470 showing the constriction of flow at the culvert and the high flows and sediment wedge at the inlet. This site is located at a tributary to Birch Creek near Talkeetna and impedes access to approximately 6.5 km of mapped stream habitat and extensive wetlands in an entirely undeveloped area.

3. Locations *Revised with Revision #1*
   - Birch Creek tributary at Mastodon Rd: 62.28277, -149.95096
   - Crocker Creek at Settler's Bay Road: 61.51249, -149.62986

VII. Objectives *Revised with Revision #1*

- Restore unimpeded access for salmon to 3.11 km of stream habitat and 2.27 ha of lake habitat by installing a stream simulation culvert on Crocker Creek at Settler's Bay Road
- Restore unimpeded access for salmon to 6.5 km of stream habitat by installing a stream simulation culvert on a tributary of Birch Creek at Mastodon Road

Road	Stream	Salmon Species	Site ID	Length of Stream (km)	Lake Area (ha)	Action
Settler's Bay Road	Crocker Creek	coho, sockeye	20501156	3.11	2.27	Replace
Mastodon Road	Birch Creek tributary	Chinook, coho	20501470	6.5	0	Replace
	Total			**9.6**	**2.27**	

VIII. Methods *Not revised with Revision #1*

Methods will conform to those used at previous successful stream restoration projects throughout the MSB. For each of the selected sites, detailed engineering drawings will be developed and reviewed by the MSB, USFWS, and ADF&G. Upon approval of the engineering design, all permits necessary for the project will be obtained prior to construction. Concurrently, a request for project bids and quotations will be developed from which a contractor will be hired by the MSB. The contractor will remove the existing culvert, install the stream simulation design culvert to achieve the identified objective, and complete stream bank stabilization work, if needed. ADF&G and USFWS will carry out site visits during construction and post-project monitoring to determine compliance to the original

design plan and document fish utilization of the new culvert. ADF&G will also carry out post-project monitoring to observe re-colonization of areas currently unoccupied by salmon.

All culvert designs will be stream simulation, a method of constructing crossings that mimics natural channel dimensions and processes through the culverted reach in order to maintain similar passage conditions to those in the adjacent channel. Stream simulation culverts are widely accepted both in Alaska and elsewhere as the preferred method in constructing small road-stream culvert crossings for aquatic organism passage. A variety of guidelines for stream simulation type crossings have been produced in recent years; this project will follow the guidelines within the U.S. Forest Service Stream Simulation publication "An ecological approach to providing passage for aquatic organisms at road-stream crossings" (USFS 2008) and/or the USFWS Culvert Design Guidelines for Ecological Function (USFWS 2020). Both of these approaches are based on selecting an appropriate reference reach and basing the design on specific measurements taken at the reference reach. The USFWS document provides additional detailed guidance, particularly for fish passage work at lake outlets and in wetland systems.

After construction, ADF&G will survey the sites using its standard criteria for assessing juvenile passage at stream crossings. ADF&G will post all post-construction monitoring data on the Fish Resource Monitor along with information on the design and construction of the replacement projects to aid other practitioners (funded separately).

IX. Benefits *Revised with Revision #1*

This project will reconnect 9.6 km of stream habitat and 2.27 ha of lake habitat, restoring free and clear movement of adult and juvenile salmonids and other anadromous and resident fish at two crossings. Sizing the culverts to pass debris and sediment as well as water at the 100-year flood will also greatly reduce the likelihood of catastrophic road failures introducing large volumes of sediment into streams. Stream simulation crossings are also more stable and less prone to bank scour, channel incision, or sediment accretion at a rate greater than the rest of the channel.

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

- March 2022 to December 2022: Select project engineering consultants, complete site survey work, and prepare engineering plans, drawings, and contractor bid packages
- January 2023: Initiate project permit reviews (U.S. Army Corps of Engineers, Alaska Department of Natural Resources, ADF&G) and coordinate project review (right of way acquisition, maintenance, and engineering)
- June 2023 to December 2023: Construct culverts, if ready
- January 2024 to October 2024: Construct any remaining sites
- August 2024 to October 2024: Carry out post-construction surveys
- October 2024 to December 2024: Complete post-construction monitoring, update Fish Resource Monitor, make information on design and construction available on ADF&G website (funded separately)
- December 2024: Provide final report to AKSSF

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

MSB Budget	Total
100 Personnel	$0
200 Travel	$0
300 Contractual	$700,000
400 Supplies	$0
500 Equipment	$0
Total	$700,000

Revised with Revision #1:

MSB Budget Narrative:

Line 300: Contractual ($700,000)
Partial payment of design and/or construction contracts for the following culvert replacements:

ADF&G #	Road	Stream	Design	Construction
20501156	Settler's Bay Road	Crocker Creek	$20,000	$444,000
20501470	Mastodon Road	Birch Creek tributary	$14,000	$222,000
Total	**$700,000**			

XII. Match Budget

MSB Match Budget	Total
100 Personnel	$0
200 Travel	$0
300 Contractual	$245,000
400 Supplies	$0
500 Equipment	$0
Total	$245,000

Revised with Revision #1:

MSB Match Budget Narrative:

Line 300: Contractual ($245,000)
Partial payment of design and/or construction contracts for the following culvert replacements:

ADF&G #	Road	Stream	Design	Construction
20501156	Settler's Bay Road	Crocker Creek	$7,000	$156,000
20501470	Mastodon Road	Birch Creek tributary	$4,000	$78,000
Total	**$245,000**			

XIII. References

Gerken, J. and S. Sethi. 2013. Juvenile coho salmon migration and habitat use in Meadow Creek, Southcentral Alaska, 2011. Alaska Fisheries Data Series Number 2013-1, U.S. Fish and Wildlife Service, Anchorage.

O'Doherty, G. and M. Eisenman. 2021. Fish passage assessment, inventory, and prioritization of culverts on the Ketchikan, Petersburg, and Wrangell road systems, 2013-2016. Alaska Department of Fish and Game, Fishery Data Series No. 21-01, Anchorage. http://www.ADF&G.alaska.gov/FedAidPDFs/FDS21-01.pdf

Taylor , R.N. and M. Love, California salmonid stream habitat restoration manual, part IX: fish passage evaluation at stream crossings, California Department of Fish and Game (2003).

USFS. 2008. "Stream Simulation: An Ecological Approach to providing passage for aquatic organisms at road-stream crossings." United States Forest Service Stream-Simulation Working Group in partnership with the US Dept of Transportation, Federal Highway Administration Coordinated Federal Lands Highway Technology Implementation Program, National Technology and Development Program, San Dimas, CA.

USFWS 2020. Culvert Design Guidelines for Ecological Function, Revision 5 February 5th, 2020. U.S. Fish and Wildlife Service, Alaska Fish Passage Program.

Appendix A: Original direct and match budget narratives

Direct budget:

ADF&G #	Road	Stream	Design	Construction
20501156	Settler's Bay Road	Crocker Creek	$20,000	$444,000
20501470	Mastodon Road	Birch Creek tributary	$14,000	$0
20501466	Hidden Hills Road	Caswell Creek tributary	N/A	$222,000
Total	**$700,000**			

Match budget:

ADF&G #	Road	Stream	Design	Construction
20501156	Settler's Bay Road	Crocker Creek	$7,000	$156,000
20501470	Mastodon Road	Birch Creek tributary	$4,000	$0
20501466	Hidden Hills Road	Caswell Creek tributary	N/A	$78,000
Total	**$245,000**			