MATANUSKA-SUSITNA BOROUGH INFORMATION MEMORANDUM IM No. 18-157

SUBJECT: ACCEPT AND APPROPRIATE $40,000 FROM THE US FISH & WILDIFE SERVICE FOR THE COLLECTION OF AERIAL IMAGERY AND LIDAR ELEVATION DATA.

AGENDA OF: October 20, 2018

ASSEMBLY ACTION:
Adopted Without Objection 11.27.18

MANAGER RECOMMENDATION: Introduce and set for public hearing.

APPROVED BY JOHN MOOSEY, BOROUGH MANAGER: _____

Route to:	Department/Individual	Initials	Remarks
	Originator	HK	
	Information Technology Director	EW	
	Finance Director		
	Borough Attorney		
	Borough Clerk		10/22/18

ATTACHEMENTS: Fiscal Note: Yes X No ___
Ordinance Serial No. 18-103 (2 pp)
Resolution Serial No. 18-072 (2 pp)
Cooperative Agreement Award (18 pp)

SUMMARY STATEMENT:
Through a cooperative agreement, the US Fish & Wildlife Service (USFWS) has offered $40,000 to support the efforts of the Matanuska-Susitna Borough Aerial Imagery and Elevation Data Program. The Matanuska-Susitna Borough was selected for this award by the Mat-Su Basin Salmon Habitat Partnership, which is part of the National Fish Habitat Partnership.

The MSB Recurring Aerial Imagery and Elevation Data Program is part of an ongoing effort to provide high-quality aerial imagery and elevation data to all of our customer, in areas where it is most needed, on a recurring basis, and in the most cost-effective manner possible.

This funding will help cover costs of the 2019 aerial imagery collection effort, for approximately 1,000 sq/mi (see Area 1 in the attached map). The final products will include a mix of 1/2-foot and 1-foot ortho-rectified imagery that will integrate with the Borough's geographic information system (GIS). If funding allows, LiDAR elevation data will likely be collected for some portion of the same area.

Imagery and elevation data are critical tools for making well-informed decisions and reducing field work for Borough citizens and staff. It supports government services as well as commercial and private endeavors.

This agreement requires a $40,000 match, which will come from the FY16 Areawide Capital Budget Appropriation for Project 47519 Aerial Imagery Acquisition Program for the match.

RECOMMENDATION OF ADMINISTRATION:
It is the Administration's recommendation to accept and appropriate the $40,000 and to approve the scope of work and budget for the Aerial Imagery and Elevation Data Program.

MATANUSKA-SUSITNA BOROUGH
FISCAL NOTE

Agenda Date: 10/30/2018
SUBJECT: ACCEPT AND APPROPRIATE $40,000 FROM THE US FISH & WILDIFE SERVICE FOR THE COLLECTION OF AERIAL IMAGERY AND LIDAR ELEVATION DATA.

ORIGINATOR: Eric Wyatt, Information Technology Director

FISCAL ACTION (TO BE COMPLETED BY FINANCE)	FISCAL IMPACT (YES) NO
AMOUNT REQUESTED $80,000	FUNDING SOURCE Grant / Oper Fund Transfer
FROM ACCOUNT # 480.000.000.4xx.xxx ($40,000)	PROJECT # 47519
TO ACCOUNT: 480.000.000.3xx.xxx	PROJECT # 47519
VERIFIED BY: Barbara Baumgartner	CERTIFIED BY:
DATE: 10/16/18	DATE:

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
Personnel Services						
Travel						
Contractual						
Supplies						
Equipment						
Land/Structures						
Grants, Claims						
Miscellaneous						
TOTAL OPERATING						

CAPITAL	80					

REVENUE						

FUNDING: (Thousands of Dollars)

General Grant Funds						
State/Federal Funds	40					
Other	40					
TOTAL	80					

POSITIONS:

Full-Time						
Part-Time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

PREPARED BY: _____ PHONE: _____
DEPARTMENT: _____ DATE: _____
APPROVED BY: _____ DATE: 10/16/18

IM No. 18-157
Ordinance Serial No. 18-103
RS18-072

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
1011 East Tudor Road
Anchorage, Alaska 99503-6199

In Reply Refer To:
FWS/ AFWCO

Heather Kelly
Matanuska-Susitna Borough
350 E. Dahlia Ave.
Palmer, AK 99645
DUNS: 081482960

Subject: Notice of Cooperative Agreement Award **F18AC00897**

Dear Ms. Kelly:

Your organization's application for Federal financial assistance titled "Mat-Su Basin Conservation Imagery Program Partnership" submitted to the U.S. Fish and Wildlife Service (Service)'s CFDA Program 15.608 -- Fish and Wildlife Management Assistance is approved. This award is made under the authority of: Fish and Wildlife Coordination Act of 1958, 16 U.S.C. 661-666. This award was announced on grants.gov under the funding announcement number: F18AS00020. This award is made based on Service approval of your organization's proposal signed on 6/28/2018, hereby incorporated into this award. Funds under this award are to be used to: initiate a long ranging collaboration and participation with the MSB Recurring Imagery Program, and include the Mat-Su Basin Salmon Habitat Partnership as a key stakeholder. This project will be the first of a series of proposals submitted by the Mat-Su borough to support high resolution aerial imagery, satellite and UAV-based collections every two to three years.

Under this award, the Recipient will:

- Develop aerial imagery scope of work for Mat-Su Basin
- Share the scope of work with USFWS and Mat-Su Salmon Habitat Partnership for review and comments
- Present a poster at the Mat-Su Basin Salmon Habitat Partnership to share proposed project area
- Contract collection of aerial imagery
- Take possession of aerial imagery collected and provide a means to distribute imagery to the public
- Provide a hard drive copy of data collected to the USFWS

Under this award, the USFWS will:

- Review the scope of work of imagery collection
- Facilitate a scope of work review by the Mat-Su Basin Salmon Habitat Partnership Steering Committee and/or Science and Data Committee
- Ensure imagery is collected in areas relevant to USFWS and Mat-Su Basin Salmon Habitat Partnership
- Maintain a data copy and disseminate to the Mat Su Basin Salmon Partnership members when requested

Performance Period

The performance period of this award is August 1, 2018 through July 1, 2020. Only allowable costs resulting from obligations incurred during the performance period may be charged to this award. All obligations incurred under the award must be liquidated no later than 90 calendar days after the end of the performance period, unless the Service approves a final financial reporting period extension (see Reporting Requirements section below). If you need more time to complete project activities, you must submit a written request to the Service Project Officer identified in the Project Contacts section below before the end of the stated performance period (see Project/Program Plan and Budget Revisions section below).

Project Performance Measurement:

The Recipient will be monitored for required Reporting; i.e. Performance Reporting, Financial Reporting and all other Mandatory Reporting as identified in the Notice of Award Letter.

Additionally, the Project performance will be measured and evaluated by monitoring the Recipient's successful completion of project activities, objectives, and deliverables as outlined in the following scheduled tasks, which must be accomplished to achieve project success:

Performance Goals/Tasks: project activities and objectives	**Anticipated Completion Date**
NFHP funds are accepted by and transferred to MSB for use on the Recurring Imagery Project. Outreach to partnership and receive feedback on area and specs.	August, 2018
Present tidbit at 2018 Symposium to announce project with Partnership	November, 2018
RFP for 2019 aerial photo mission is developed and released.	January, 2019
Vendor is chosen for 2019 mission.	March, 2019
Aerial imagery mission is completed.	August, 2019
2019 mission is presented at the annual Symposium. Deliverables are released to the public at that time or shortly thereafter.	November 2019
Share copy of imagery data to USFWS hard drive. If there is sufficient funding, complete LIDAR data collection and share copy of LIDAR data to USFWS hard drive.	July, 2020

The Recipient's project officer must immediately communicate (via telephone, fax or email) any significant changes to (a) project objectives, (b) the above schedule, (c) approved budget, or (d) project personnel, and then document these changes (along with an explanation of why they occurred and suggestions on how to deal with them) in a Significant Development Report (SDR). Please see the Significant Development section of this award letter for details.

This award is funded as follows:

Description of Action	USFWS	Recipient
Base Award: 8/1/2018 - 7/1/2020	$40,000.00	$40,000.00
Award Total:	**$40,000.00**	**$40,000.00**

Federal Share/Match Requirements:
The Federal share of the total project expenditures cannot exceed 50 percent. Recipient is eligible to request Federal obligated funds up to but not in excess of an amount equal to 50 percent of the total project expenditures.

Indirect Costs: The recipient has elected not to charge any indirect costs to this award.

System for Award Management (SAM) Registration:
Under the terms and conditions of this award, your organization must maintain an active SAM registration at https://www.sam.gov/portal/SAM/until the final financial report is submitted or final payment is received, whichever is later. If your organization's SAM registration expires during the required period, the Service will suspend payment under this and all other Service awards to your organization until you update your organization's SAM registration.

Terms of Acceptance:
Acceptance of a financial assistance award (i.e., grant or cooperative agreement) from the Service carries with it the responsibility to be aware of and comply with the terms and conditions applicable to the award. Acceptance is defined as the start of work, drawing down or requesting funds, or accepting the award via electronic means. Awards are based on the application submitted to and approved by the Service. Awards are subject to the terms and conditions incorporated into the notice of award either by direct citation or by reference to the following: Federal regulations; program legislation or regulation; and special award terms and conditions. The terms and conditions of Service awards flow down to subrecipients and contractors, unless a particular award term or condition specifically indicates otherwise. The Federal regulations applicable to Service recipients and their subrecipients and contractors are listed by recipient type in the **Service Financial Assistance Award Terms and Conditions** posted on the Internet at https://www.fws.gov/grants/atc.html. If you do not have access to the Internet and require a printed copy of the award terms and conditions, contact the Service Project Officer identified below.

If Recipient decides to not accept this award, Recipient must notify the Service Project Officer in writing within 30 calendar days of that decision.

Special Conditions and Provisions:
Acknowledgement of Support in Publications:
Any materials produced under this award must include the following statement acknowledging support from the U.S. Fish and Wildlife Service, Habitat Restoration Program.

Scientific and Scholarly Activities:
The Recipient will conduct scientific and scholarly activities as defined in Department of the Interior policy 305 DM 3, *Integrity of Scientific and Scholarly Activities* that are intended for use in Service

decision-making processes and/or publications. Acceptance of this award carries with it the responsibility to be aware of and follow the Code of Scientific and Scholarly Conduct described in 305 DM 3, Section 3.7 to the best of your ability.

Intangible Property:
Work, data and other reports produced under this award are subject to Intangible Property requirements found in Federal Award Terms and Conditions CFR 200.315. Below is a summary: The Recipient may copyright work and data created under this award. However, the USFWS reserves the right to receive, reproduce, publish, use the work and data for Federal purposes or authorize others to do so without royalty-fees.
The Recipient is encouraged to review CFR 200.315 in reference to Intangible Property found here: http://www.ecfr.gov/cgi-bin/textidx?SID=bcef997a80b6cf717d00de9709cbb5be&mc=true&node=pt2.1.200&rgn=div5.

Payments:
Your organization has completed enrollment in U.S. Treasury's Automated Standard Application for Payment (ASAP) system (https://www.fiscal.treasury.gov/fsservices/gov/pmt/asap/asap_home.htm). When requesting payment in ASAP, your Payment Requestor will be required to enter an Account ID. The number assigned to this award is the partial Account ID in ASAP. When entering the Account ID in ASAP, the Payment Requestor should enter the award number identified in the subject line on letter followed by a percent sign (%). Refer to the ASAP.gov Help menu for detailed instructions on requesting payments in ASAP.

Reporting Requirements:

Financial and Performance Reporting Requirements:
Annual interim and final financial and performance reports are required under this award. The report periods and due dates under this award are:

Report:	Report Period:	Report Due Date:
Interim financial report	August 1, 2018 – September 30, 2019	December 29, 2019
Interim performance report	August 1, 2018 – September 30, 2019	December 29, 2019
Final Financial Report	August 1, 2018 – July 1, 2020	September 28, 2020
Final Performance Report	October 1, 2019 – July 1, 2020	September 28, 2020

Recipients must use the Standard Form (SF) 425, *Federal Financial Report* form for all financial reporting. This form is available at http://www.grants.gov/web/grants/forms/post-award-reporting-forms.html#sortby=1.

Performance reports must contain: 1) a comparison of actual accomplishments with the goals and objectives of the award as detailed in the approved scope of work; 2) a description of reasons why established goals were not met, if appropriate; and 3) any other pertinent information relevant to the project results. Please include the Service award number provided in the subject line of this letter on all reports.

Financial and performance reporting due dates may be extended by the Service upon receipt of a written request addressed to the Service Project Officer identifying the type of report to be extended, the requested revised due date, and a justification for the extension. The Service Project Officer may approve an additional extension if justified by a catastrophe that significantly impairs the recipient's

operations. Requests for reporting due date extensions must be received by the Service Project Officer no later than one day before the original reporting due date.

All Financial and Performance Reports must be sent to fw7_fa_cgs@fws.gov for review and acceptance. DO NOT send the reports to the Service Project Officer; the reports will be distributed to the appropriate individuals once received.

Significant Developments Reports (SDR):
Events may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, notify the Service Project Officer in writing as soon as the following types of conditions become known:

- Problems, delays, or adverse conditions that will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of any corrective action(s) taken or contemplated, and any assistance needed to resolve the situation.
- Favorable developments that enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

All Significant Development Reports must be sent to the Service Project Officer

Other Reports or Deliverables:

Deliverable	Submission Instructions/Details	Deliverable Due Date
Final RFP	PDF file via email to franklin_dekker@fws.gov	January 31, 2019
Copy of imagery data and any LIDAR data collected to USFWS hard drive	Notify franklin_dekker@fws.gov when ready and will supply hard drive	July 1, 2020

All other deliverables must be sent to the Service Project Officer

Conflict of Interest Disclosures:
Recipients are responsible for notifying the Service Project Officer in writing of any actual or potential conflicts of interest that may arise during the life of this award. Conflicts of interest include any relationship or matter which might place the Recipient, the Recipient's employees, or the Recipient's subrecipients in a position of conflict, real or apparent, between their responsibilities under this award and any other outside interests. Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the Recipient, the Recipient's employees, or the Recipient's subrecipients in the matter. Upon receipt of such a notice, the Service Project Officer in consultation with their Ethics Counselor will determine if a conflict of interest exists and, if so, if there are any possible actions to be taken by the Recipient, the Recipient's employee(s), or the Recipient's subrecipient(s) that could reduce or resolve the conflict. Failure to resolve conflicts of interest in a manner that satisfies the Service may result in any of the remedies described in 2 CFR 200.338, Remedies for Noncompliance, including termination of this award.

Other Mandatory Disclosures:
Recipients and their subrecipients must disclose, in a timely manner, in writing to the Service or pass-through entity all violations of Federal criminal law involving fraud, bribery, or gratuity violations potentially affecting this award. Non-Federal entities that have received a Federal award including the term and condition outlined in 2 CFR 200, Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters are required to report certain civil, criminal, or administrative proceedings to SAM. Failure to make required disclosures can result in any of the remedies described in 2 CFR 200.338, Remedies for noncompliance, including suspension or debarment (See 2 CFR 200.113, 2 CFR Part 180, 31 U.S.C. 3321, and 41 U.S.C. 2313).

Project/Program Plan and Budget Revisions:
Recipients are required to report deviations from budget or project scope or objective, and request prior approvals for budget and program plan revisions in accordance with 2 CFR 200.308 unless otherwise specifically waived in this award.

Project Period Extensions:
Recipient is authorized without further approval to initiate a one-time extension of the period of performance by up to 12 months unless one or more of the conditions outlined in paragraphs (d)(2)(i) through (iii) of 2 CFR 200.308(d)(2) apply. For one-time extensions, the Recipient must notify the Federal awarding agency in writing with the supporting reasons and revised period of performance at least 10 calendar days before the end of the period of performance specified in this award. This one-time extension may not be used for the purpose of spending an unused balance of funds that remains after all approved project activities have been completed.

Project Contacts:

Service Project Officer:	**Recipient Project Officer:**
Franklin Dekker, Hydrologist U.S. Fish and Wildlife Service Anchorage Field Office 4700 BLM Rd Anchorage, AK 99507 907-271-3764 Franklin_dekker@fws.gov	Heather Kelley, GISP, GIS Specialist Matanuska-Susitna Borough 350 E. Dahlia Ave. Palmer, AK 99645 907-861-8695 Heather.Kelley@matsugov.us
Service Grants Officer for this award is:	
Rich Primmer, Grants Officer Division of Contracting and General Services U.S. Fish and Wildlife Service/Region 7 1011 E. Tudor Road, MS 171 Anchorage, AK 99503-6199 907-786-3611 Email: Rich_Primmer@fws.gov FA Email: fw7_fa_cgs@fws.gov	

Please contact Franklin Dekker `with any questions. Please include the Service award number **F18AC00897** in all written communications.

Sincerely,

RICHARD PRIMMER

Digitally signed by RICHARD PRIMMER
Date: 2018.09.21 13:54:11 -08'00'

Richard Primmer, Grants Officer
Financial Assistance Branch
Division of Contracting and General Services
U.S. Fish and Wildlife Service/Region 7

Mat-Su Basin Conservation Imagery Program Partnership

Project Summary

Organization and Contact Person: Heather Kelley, Matanuska-Susitna Borough E-mail: Heather.Kelley@matsugov.us Phone Number: (907) 861-8695 Project Title (95 characters maximum): **Mat-Su Basin Conservation Imagery Program Partnership**
Funding Request: $40,000 Match: $40,000 Project Total: $80,000
Project Location: Matanuska-Susitna Basin, Alaska
Proposed Accomplishment Summary (500 characters maximum): Partnership members and other organizations coordinate to develop projects and programs meeting Partnership strategic objectives based on the current and future availability of aerial imagery. These could include wetland assessments, stream bank stability, erosion and development mapping, development/build out mapping, land use/land cover mapping, impervious surface mapping, culvert monitoring and invasive species surveys.
Project Description
The importance to the resource (350 characters maximum): Mapping and spatial analyses are cornerstones of Partnership objectives which are supported by the identification and location of features resolved in aerial imagery. As a key stakeholder in the MSB Recurring Imagery Program, Partnership members will have critical tools to monitor, evaluate, understand, measure and assess habitat conditions.
The resource issue (problem or need) and the specific cause of the issue (350 characters maximum): Due to the vast area of the Mat-Su basin and limited road system, recurring aerial imagery is a critical asset for managing and assessing freshwater salmon habitat in remote areas, and allows us to better understand how and where salmon systems are being pressured in urbanized areas.
The measurable goals and objectives of the project with reference to the issue (350 characters maximum): • A 2019 Mat-Su aerial photo mission is funded by this award. LIDAR will also be collected if there are sufficient funds. • The Partnership will become a key, collaborative stakeholder in the MSBRecurring Imagery Program. • Partnership members and other organizations coordinate to develop projectsand programs based on the current and future availability of aerial imagery.
The method applied to accomplish the objective (350 characters maximum): NFHP funding will pass from MSB directly to the vendor collecting the 2019 aerial imagery and MSB will not remove an indirect/overhead rate. MSB will also contribute 1:1 non-federal match. The 2019 mission will be presented at the 2019 Symposium.

Describe how the proposed conservation actions will achieve the proposed conservation benefits to salmon (1250 characters maximum):

Digital aerial imagery is one of the most important decision support tools for organizations responsible for stewardship of critical natural resources and infrastructure. Due to the vast area of the Mat-Su basin and limited road system, aerial imagery is a particularly important asset for managing and assessing freshwater salmon habitat in remote areas, and allows us to better understand how and where salmon systems are interfacing with urbanized areas.In the past, aerial imagery in the Mat-Su basin has been collected sporadically and is not always available to the public. By establishing the Partnership as a key stakeholder in the MSB Recurring imagery Program, Partners will have better opportunity to meet strategic objectives which include wetland and vegetative assessments, index watersheds, stream bank stability, erosion mapping, development/build out mapping, land use/land cover mapping, impervious surface mapping, culvert monitoring and invasive species surveys. Achieving these objectives would benefit all five species of Pacific salmon that migrate, spawn, and rear in the Mat-Su Basin.

Identify the project's linkage to a specific goal or objective in the Partnership's Strategic Action Plan Conservation Strategies:

Objective 1.2: Habitat Quality

Strategic Action 1.2.1: Habitat Quality Plan

Strategic Action 1.2.3: Salmon Habitat Models

Objective 1.5 Index Watersheds

Objective 2.1: Identification of Priority Riparian Areas for Salmon

Strategic Action 2.1.1: Field Survey and Priority Riparian Habitat

Objective 2.2: Protection of Priority Salmon Riparian Habitat

Strategic Action 2.2.4: Verify Permitted Stream Crossings are Legal Access

Objective 2.3: Restoration of Priority Riparian Habitat

Strategic Action 2.3.2: Restore Important Riparian Habitat

Objective 3.1: Comprehensive Baseline and Monitoring for Stream Temperatures

Strategic Action 3.1.2: Map non-glacial cold water refugia

Objective 5.1 Identify, Map and Assess Functions of Wetlands for Salmon

Strategic Action 5.1.1: Map Priority Wetlands for Salmon

Strategic Action 5.1.3: Cumulative Impact Study of Wetland Loss

Objective 6.3: Imperviousness Impact Assessment

Strategic Action 6.3.1: Map Impervious Surfaces & stormwater Network

Strategic Action 6.3.2: Map and identify stormwater drainage network that includes pipes and ditches.

Objective 10.1: Salmon Ecology of Cook Inlet

Strategic Action 10.1.1: *Identify and Map Habitat Types*

Objective 11.1: Impacts to Salmon and Salmon Habitat

Strategic Action 11.1.1: Assess, inventory, and identify a minimum of 50% of the OHV trails within the Mat-Su Basin

Project title: Mat-Su Recurring Imagery Program 2017

Date: October 10, 2017

NFHP funds requested: $40,000

Cost Sharing provided (match + leverage): $40,000

Geographic location: Matanuska-Susitna Basin, south-central Alaska (see Attachment 1: Project Area Map)

Lat 62° 16' 18" North, Long 149° 55' 5" West

Project point of contact:

Heather Kelley, GIS Specialist

Matanuska Susitna Borough

Heather.Kelley@matsugov.us

Project Abstract

Digital aerial imagery is one of the most important decision support tools for organizations responsible for stewardship of critical natural resources and infrastructure. Due to the vast area of the Mat-Su basin and limited road system, aerial imagery is a particularly important asset for managing and assessing freshwater salmon habitat in remote areas, and allows us to better understand how and where salmon systems are interfacing with urbanized areas.

Over the years, an assortment of aerial imagery projects have been conducted in the Mat-Su basin by a variety of organizations and in support of a various projects and use cases. However, oftentimes many years pass between aerial photo missions. When aerial photo projects do occur, user groups can be left unserved as portions of the basin are not acquired, or copyrighted imagery precludes its use by the public.

However, in 2016, the Mat-Su borough initiated a series of studies which investigated needs and use cases for a recurring imagery program intended to collect publicly-available aerial and/or satellite imagery on a two to three-year cycle. Many agencies and NGO's participated in these studies which concluded that recurring imagery is vital to understanding growth in the Mat-Su, such as new development and infrastructure. Furthermore, organizations indicated that recurring imagery is fundamental to the management of natural systems, particularly those susceptible to change such as hydrologic regimes and climate-sensitive resources.

To help support several key objectives of the Partnership Strategic Plan, this proposal seeks to initiate a long ranging collaboration and participation with the MSB Recurring Imagery Program, securing the Mat-Su Basin Salmon Habitat Partnership as a key stakeholder. This proposal will be the first of a series of proposals submitted by the Mat-Su borough to support high resolution aerial imagery, satellite and UAV-based collections every two to three years. The MSB will provide a 1:1 match of non-federal funds for this and all subsequent proposals and will not require an overhead/indirect rate from the NFHP funds.

Project Objectives: We have three main objectives

1. Through this award, Partnership will contribute roughly 1/3 to 1/2 of the cost of a 2019 aerial imagery mission in the Mat-Su basin. If sufficient funds are raised, LIDAR data will also be collected.
2. The Partnership will become a key stakeholder in the MSB Recurring Imagery Program, providing leverage to ensure that aerial photo project areas and deliverables directly support Partnership strategic objectives.
3. Partnership members and other organizations coordinate to develop projects and programs based on the current and future availability of aerial imagery. These could include vegetative/wetland assessments, stream bank condition assessments, erosion and development mapping, index watershed studies, development/build out mapping, land use/land cover mapping, impervious surface mapping, culvert monitoring and invasive species surveys.

Project narrative

This project builds upon work accomplished by the Mat-Su Borough (MSB), the Nature Conservancy (Conservancy) and the Mat-Su Basin Salmon Habitat Partnership (Partnership) to establish a holistic understanding of Mat-Su ecosystems and the rapid urbanization and population growth occurring in parts of the Mat-Su basin. Many projects accomplished by these organizations are dependent on information provided through imagery, such as mapping Mat-Su lakes, rivers, streams and watershed boundaries, mapping storm water runoff, mapping wetlands and their function, mapping culverts and barriers to fish passage, mapping impervious surface, hydrologic analyses and improvements to the Anadromous Waters Catalog.

Since its inception in 2005, the Mat-Su Basin Salmon Habitat Partnership has recognized the importance of remote sensing data to support the missions of agencies and organizations responsible for managing Mat-Su salmon habitat. In 2009, the Partnership released a brief entitled *Ortho-Rectified Aerial Imagery and Light Detection and Ranging (LIDAR) Acquisition for the Mat-Su Valley and nearby areas* which identified "the need for high resolution aerial and topographic data" in part to support the 2011 Mat-Su LiDAR and Imagery Project and to address many of the science and research needs of the Partnership's strategic plan. The 2011 Mat-Su LiDAR and Imagery project was indeed integral to meeting many partnership strategic objectives. However, since 2011, the Mat-Su basin has experienced and continues to experience significant changes to both natural systems and the built environment. Observing, measuring and managing these changes are fundamental to several Partnership strategic objectives and recurring imagery is an essential tool for meeting them.

Change in the Mat-Su: For many years, one of the most commonly cited characteristics of the Matanuska-Susitna Basin is change. Studies and articles pertaining to the Mat-Su frequently note the in-migration of over 45,000 people over the past 15 years. Human populations in the lower watersheds of the basin are the fastest growing in Alaska due to its affordable high-quality rural lifestyle and easy commuting to Alaska's largest city, Anchorage. In 2016, the US Census released

new statistics for the Mat-Su Borough stating that it had reached a population of over 100,000

people, thus surpassing the population of Fairbanks and placing the Mat-Su borough as the second largest population in Alaska. This population growth has placed an increasing variety and volume of demands on the lands and waters of the Mat-Su. Along the road system, agricultural and open space areas are rapidly being converted to residential and recreational subdivisions, with accompanying commercial development. As populations grow and resource demand increases, the potential impacts to salmon habitat rise.

Furthermore, the Mat-Su basin is also experiencing changes to natural systems. Channel migration of major river systems occurs throughout the basin and hydrologic regimes can vary seasonally and catastrophic flooding and erosion events frequently require expensive response and mitigation measures. The 2011 USGS National Land Cover Database indicates that 180 square miles of perennial ice in the Mat-Su basin have disappeared since 2001.

Change to the landscape, whether it be categorized as growth, alteration, population movements, environmental, economic, climatic or otherwise, must be measured to be understood. As a key stakeholder in the Mat-Su Borough recurring imagery program, the Partnership will have perhaps the most effective tool for measuring change in the Mat-Su basin both regionally and at site scales.

Benefits of a Recurring Imagery Program: Aerial photo missions and other remote sensing projects measure the condition of natural resources *at the moment the photo is taken*. However, once those conditions change, whether by river channel migration, new roads and subdivisions built or loss of perennial ice, the photo is no longer an accurate depiction of the landscape and its worth as a decision support tool diminishes. Too often, outdated aerial imagery continues to be used simply because it is "best available data". However, the MSB recurring imagery program avoids the value degradation of outdated imagery by ensuring a dependable, predictable refresh of photographic products consistent with the types and amount of change experienced in the Mat-Su basin.

Aerial Imagery and Strategic Plan Objectives: Mapping and spatial analyses are cornerstones of many science-based Partnership objectives which are supported by the identification and location of features seen in aerial imagery. The following Partnership objectives involve mapping, spatial analyses or measurements which will be directly supported through the availability of recurring imagery. Achieving these objectives would benefit all five species of Pacific salmon that migrate, spawn and rear in the Mat-Su Basin.

Objective 1.2 Habitat Quality:

- **Strategic Action 1.2.1: Habitat Quality Plan:** The Science and Data Committee will develop a plan for 1) defining the characteristics of habitats that are critical for salmon at each lifestage and 2) ***identifying places that provide these habitats.***
- **Strategic Action 1.2.3 Salmon Habitat Models:** Support projects that build upon existingdata and contribute new findings to **predict the location** of critical habitat for salmon at each life stage.

Objective 1.5 Index Watersheds: Index watersheds are locations for long-term monitoring and study. Index watersheds will be important to salmon and representative of Mat-Su Basin streams. Some may be vulnerable to human activities and climate change in the Mat-Su Basin and others will be less threatened, providing a reference for comparison. Within these index watersheds a number of features would be monitored: water quality, water quantity, ***landscape change through use of aerial imagery captured at regular intervals***, documentation of salmon habitat location, quality, and quantity, and human activities.

Objective 2.1 Identification of Priority Riparian Areas for Salmon: By 2018, 50% of salmon riparian areas will be field surveyed, ***mapped*** and prioritized for long term legal protection and/or restoration.

- **Strategic Action 2.1.1 Field Survey and Priority Riparian Habitat:** Prioritize riparian habitat along stream and shoreline reaches (both stream and lake) for protection and/or restoration within the Lowland East and Lake Complex target areas by 2018. ***Map and prioritize riparian habitats*** for protection and restoration within the Upland and Lowland West Complex target areas by 2018.

Objective 2.2 Protection of Priority Salmon Riparian Habitat:

- **Strategic Action 2.2.4: Verify Permitted Stream Crossings are Legal Access:** ***Map andprioritize permitted stream crossings*** and determine how to minimize impacts to priority riparian habitat. In cooperation with ADF&G, work to ensure that important riparian habitat is protected and/or restored within areas of permitted stream crossings, limit redundant crossings, and withdraw permitted crossings that do not provide access to publiclands.

Objective 2.3 Restoration of Priority Riparian Habitat:

- **Strategic Action 2.3.2: Restore Important Riparian Habitat:** Projects would include comprehensive actions to protect and restore salmon habitat, such as ***mapping current condition of riparian habitats***, completing a survey for the Anadromous Waters Catalog, identifying priorities for restoration, and establishing a monitoring program. Methodsshould come from those identified in the ADF&G Streambank Revegetation and Protection Manual (2007).

Objective 3.1 Comprehensive Baseline and Monitoring for Stream Temperatures:

- **Strategic Action 3.1.2:** ***Map non-glacial cold water refugia*** in priority watersheds. Determine priority watersheds with Science and Data Committee to maximize coordination with other partnership activities.

Objective 5.1 Identify, Map and Assess Functions of Wetlands for Salmon: By 2018, wetlands that are important for salmon will be identified, ***mapped*** and assessed for their functional importance for salmon.

- **Strategic Action 5.1.1: Map Priority Wetlands for Salmon:** ***Map wetlands within priority watersheds*** for salmon and rank watershed for impact vulnerability to salmonpopulations.
- **Strategic Action 5.1.3: Cumulative Impact Study of Wetland Loss:** Conduct a study of cumulative impacts to wetlands in the MSB from 2000 to 2010. (note: this proposalcould extend the study of wetland loss beyond 2010).

Objective 6.3 Imperviousness Impact Assessment:

- **Strategic Action 6.3.1:** ***Map Impervious Surfaces*** & Stormwater Network
  Map current data on impervious surfaces and relationships with water bodies. By 2015, replace existing impervious surface data with available updates and apply to ongoing prioritization models.
- **Strategic Action 6.3.2:** ***Map and identify stormwater drainage network that includespipes and ditches***. Map accumulations of stormwater runoff in streams.

Objective 10.1 Salmon Ecology of Cook Inlet:

- **Strategic Action 10.1.1: Identify and Map Habitat Types:** identify habitat types in CookInlet and ***map with Shorezone, ESI or additional survey.***

Objective 11.1 Impacts to Salmon and Salmon Habitat:

- **Strategic Action 11.1.1:** ***Assess, inventory, and identify a minimum of 50% of the OHV trails within the Mat-Su Basin*** and identify intersections with critical fish habitat by winter of 2018.

Project Objectives, Methodology, and Measures of Success

Objective: The objective of this proposal is to initiate a long-term collaboration between the Partnership and the Mat-Su Recurring Imagery Program. Every two to three years the Mat-Su Borough will submit a proposal intended to cover roughly 30-50% of the cost of an aerial photo mission.

Methodology: NFHP funding will pass from MSB directly to the vendor collecting the aerial imagery and MSB will not remove an indirect/overhead rate from the award. MSB will also contribute 1:1 non-federal match.

Measures of Success:

1. Roughly 1/3 to 1/2 of the cost of a 2019 Mat-Su aerial photo mission is funded by this award. The 2019 aerial photo mission will be presented at the 2019 annual Mat-SuSalmon and Conservation Science Symposium. If possible, the deliverables will be released to the public at the symposium as well.
2. Partnership members and other organizations coordinate to develop projects and programs based on the current and future availability of aerial imagery. These could include index watershed study plans, wetland assessments, stream bank stability, erosion and development mapping, development/build out mapping, land use/land cover mapping, impervious surface mapping, culvert monitoring and invasive species surveys.

3. The Partnership will be a collaborative stakeholder in the MSB Recurring Imagery Program, providing input on aerial imagery project areas and deliverables that will support Partnership strategic objectives.

Project Timeline: August 1, 2018 – July 1, 2020

Timeline	Milestone and Deliverable
August, 2018	NFHP funds are accepted by and transferred to MSB for use on the Recurring Imagery Project. Outreach to partnership and receive feedback on area and specs.
November, 2018	Present tidbit at 2018 Symposium to announce project with Partnership
September, 2018 - January, 2019	RFP for 2019 aerial photo mission is developed and released.
March, 2019	Vendor is chosen for 2019 mission.
April, 2019- August, 2019	Aerial imagery mission is completed.
November 2019	2019 mission is presented at the annual Symposium. Deliverables are released to the public at that time or shortly thereafter.
July, 2020	Share copy of imagery data to USFWS hard drive. If there is sufficient funding, complete LIDAR data collection and share copy of LIDAR data to USFWS hard drive.

Qualifications

Heather Kelley, GIS Specialist, MSB GIS Division. Heather is a certified Geographic Information Systems Professional and has been with the Mat-Su Borough GIS Division since 2006. She was co-lead on the MSB's 2011 LiDAR and Imagery Project from 2011 until the completion of the project in 2013. Heather holds a M.S. in GIS and remote sensing from the University of Wisconsin, Madison and has been working in the field of GIS since 1999.

Brianne Blackburn, MSB Environmental Planner, MSB Planning Division. Brianne has been coordinating Natural Resource Management Projects in Alaska since 2007 with Soil and Water Conservation Districts, the State of Alaska Department of Natural Resources, and currently with the MSB. Brianne has a M.S. in Project Management from UAA School of Engineering, Science & Project Management and undergraduate degree in Environmental Science.

Jim DePasquale, Spatial Analyst, The Nature Conservancy. Jim is a certified Geographic Information Systems Professional and has been employed with the Conservancy for five years. Formerly the Mat-Su Borough GIS Division Manager, Jim has a long history of leading remote sensing projects, including co-leading the MSB's 2011 LiDAR and Imagery Project and the 2016 Prince of Wales Island LiDAR project. Jim is a member of the Alaska Hydrographic Technical Working Group and holds a graduate

certificate in GIS from Penn State University as well as undergraduate degrees in forestry and economics.

Attachment 1: Project Area Map