Alaska Mapping Business Plan:

Integrating Mapping, Risk Assessment, and Resilience Planning

September 2021


Galena 2013


Matanuska-Susitna Borough 2012


Nenana 2008


Nome 2007


Eagle 2013


Emmonak 2005

State of Alaska
Department of Commerce, Community, and Economic Development
Division of Community and Regional Affairs

United States
Department of Homeland Security
Federal Emergency Management Agency
Region X

Eagle 2009

Shishmaref 2001

Aniak 2002

Eagle 2000

Valdez 2006

Shishmaref 2001

Alaska Department of Commerce, Community, and Economic Development; Division of Community and Regional Affairs

Alaska Risk MAP Program
Sally Russell Cox, Alaska Risk MAP Coordinator
Telephone: (907) 269-4588
Email: sally.cox@alaska.gov

Funded Under

Federal Emergency Management Agency Cooperating Technical Partners Program Partnership Agreement: EMS-2020-CA-00008

Photo Credit: Cover page photos provided compliments of numerous agencies and photographers. Seward, Nenana, Nome, Cordova, Valdez, Shishmaref, and Kivalina photos provided by the Alaska Division of Community and Regional Affairs. Emmonak and Aniak photos provided by the Alaska Division of Homeland Security and Emergency Management Services. Eagle photos provided by *Fairbanks News Miner.* Galena photos courtesy of Ed Plumb, National Weather Service. Matanuska-Susitna Borough photos courtesy of Matanuska-Susitna Borough.

Table of Contents

This page intentionally left blank

List of Tables

List of Figures

Figure 1: River bank erosion caused by a flood event of the Kuskokwim River threatens a residence in the village of Akiak

Photo: Ivan Ivan, Akiak Native Community

EXECUTIVE SUMMARY

Over the last 20 years, the number of state- and federally-declared disasters in Alaska has increased dramatically. The majority of these disasters are caused by flooding and severe storms. Each year, these events put Alaskan communities at risk of loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in the coastal regions of Alaska.

FEMA's flood hazard maps are one of the essential tools for flood hazard mitigation and implementation of the National Flood Insurance Program (NFIP) in the United States. These maps are used an estimated 20 million times annually in the private and public sectors. The State of Alaska and its local governments rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood losses. Flood hazard maps produced by FEMA currently serve 32 Alaska borough and city governments.

FEMA's efforts to provide flood hazard maps to inform the nation's understanding about flood risk have evolved significantly over the past nearly two decades. From 2002-2008, FEMA's Map Modernization (Map Mod) effort transformed most of the nation's flood hazard mapping inventory to 21st century digital technology and restored confidence in the reliability of floodplain boundaries, while making some updates to underlying engineering data. In order to leverage the successes of Map Mod and further enhance the use, value, and accuracy of flood hazard mapping and related data, FEMA developed the Risk Mapping, Assessment and Planning (Risk MAP) Program in 2008-2009.

Risk MAP represents a philosophical and tactical shift in how FEMA delivers information necessary for flood and other hazard reduction. The focus has shifted from digitizing maps (Map Mod) to evaluating flood hazard data needs, meeting flood hazard data needs, expanding data availability and improving data accessibility. While earlier mapping efforts took one-to-two years with little interaction with the community under study, the Risk MAP process typically takes four-to-six years, with extensive technical assistance provided to the community, combined with a more holistic approach that focuses not only on the flood maps, but on all hazards impacting the community, and how the new data, risk assessments and tools can be integrated into community plans and ongoing efforts to increase community resilience.

The goal of the Risk MAP Program is to increase local resilience by providing communities with hazard information and tools they can use to strengthen local ability to make informed decisions about reducing risk. A cornerstone of Risk MAP is the collaborative partnerships developed to increase community resilience to natural hazard risks.

DCRA and FEMA have collaborated for nearly 30 years to reduce loss of life and property through strategies and programs that reduce natural hazard risk in Alaska. As the State of Alaska's designated State Coordinating Agency for the NFIP, DCRA has actively participated in studying the status of flood hazard mapping and making recommendations for updating or creating new maps. Over the years, significant progress has been made through FEMA's mapping efforts and DCRA's Community Mapping Program. However, the data gathering and the prioritization scheme that formed the basis of DCRA's earlier mapping strategies had not undergone a comprehensive update to reflect mapping progress during

recent years. Consequently, mapping priorities identified in earlier plans did not reflect the current availability of mapping data, local socioeconomic conditions, natural hazard and climate change data as collected by various state and federal agencies.

In 2011, DCRA funded a new effort to rank and prioritize Alaska's watersheds based on a range of criteria specific to Alaska. To accomplish this, state agencies and local communities were coordinated with to obtain information and data necessary for the prioritization of mapping needs. A consulting firm, URS, Inc. (now AECOM), was hired to carry out this process. The process of data acquisition, analysis, and prioritization of future study needs resulted in a new tool, the ***Alaska Prioritization and Future Studies Sequencing Decision Support System,*** which has informed the identification of Alaska's mapping priorities over the past 8 years. This tool is described in detail in Chapter Seven**.** Since development of this prioritization methodology, 17 NFIP-participating local governments have been the recipients of Risk MAP studies. Each of these communities has received or is in the process of receiving non-regulatory risk assessment tools and products, with 10 communities receiving new or updated regulatory Flood Insurance Studies and Flood Insurance Rate Maps.

While the regulatory products of Risk MAP - the Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) - are a critical means to identify flood risk and provide local eligibility to receive federally-backed flood insurance, flooding is not the only natural hazard effecting Alaska's communities, nor is participation in the NFIP a suitable option for all Alaskan communities. Alaska's strategy for Risk MAP addresses both issues.

For example, several communities engaged in Risk MAP Studies have identified landslide, avalanche and erosion as significant threats. Risk MAP Cooperating Technical Partner Grant Program funding has been provided to the City and Borough of Sitka for a landslide study, to the City and Borough of Juneau for a landslide and avalanche hazard study, to the City of Emmonak for a channel migration study, and to the City of Homer for a coastal bluff stability study.

Alaska's Risk MAP Strategy also focuses on bringing the tools and products of Risk MAP to communities that don't participate in the NFIP. Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 109 incorporated municipal governments (cities and boroughs) that have no Flood Insurance Rate Maps. No ordinances exist to regulate floodplain development in these cities and boroughs, nor are they eligible to receive federal flood insurance. Many of these communities are highly flood-prone, resulting in costly State and federal disasters without the benefit of federal flood insurance.

Over the past two decades, awareness has increased of the number of communities, particularly in western and northern Alaska, whose safety and viability is being impacted not only by flooding, but also by erosion and permafrost degradation. A key impediment to these communities making progress in addressing these impacts is the lack of scientific study and data needed to more thoroughly understand the near-, mid- and long-term consequences of these impacts. Without quantifiable data, it is very difficult for these

communities, and the agencies assisting them, to make informed decisions and develop strategies to adapt and respond to hazard threats. A **Statewide Threat Assessment** conducted for the Denali Commission in 2019 identified 144 Alaska Native communities who are at risk to some extent from infrastructure damage from flooding, erosion and permafrost thaw (UAF et al., 2019)

The 2021 Alaska Mapping Business Plan provides a high-level approach to how the Alaska Risk MAP Program can help environmentally threatened communities who don't participate in the NFIP respond and adapt to flood and other hazard threats, while continuing to assist NFIP-communities in reaching their resilience goals.

The Alaska Mapping Business Plan provides an overview of Alaska's NFIP-participating local governments, their local and FEMA characteristics, and the status of Risk MAP studies within these communities. The plan discusses the new Risk MAP initiative to assist environmentally threatened Alaska Native Villages. The State of Alaska's Risk MAP Strategy is discussed, including the prioritization tool used to rank NFIP-participating communities for new Risk MAP Studies, and the process used to prioritize imminently-threatened Alaska Native Villages. Finally, the State's Risk MAP study recommendations and goals for the coming year are provided.

Figure 2: Yukon River Ice Jam at Galena, Alaska

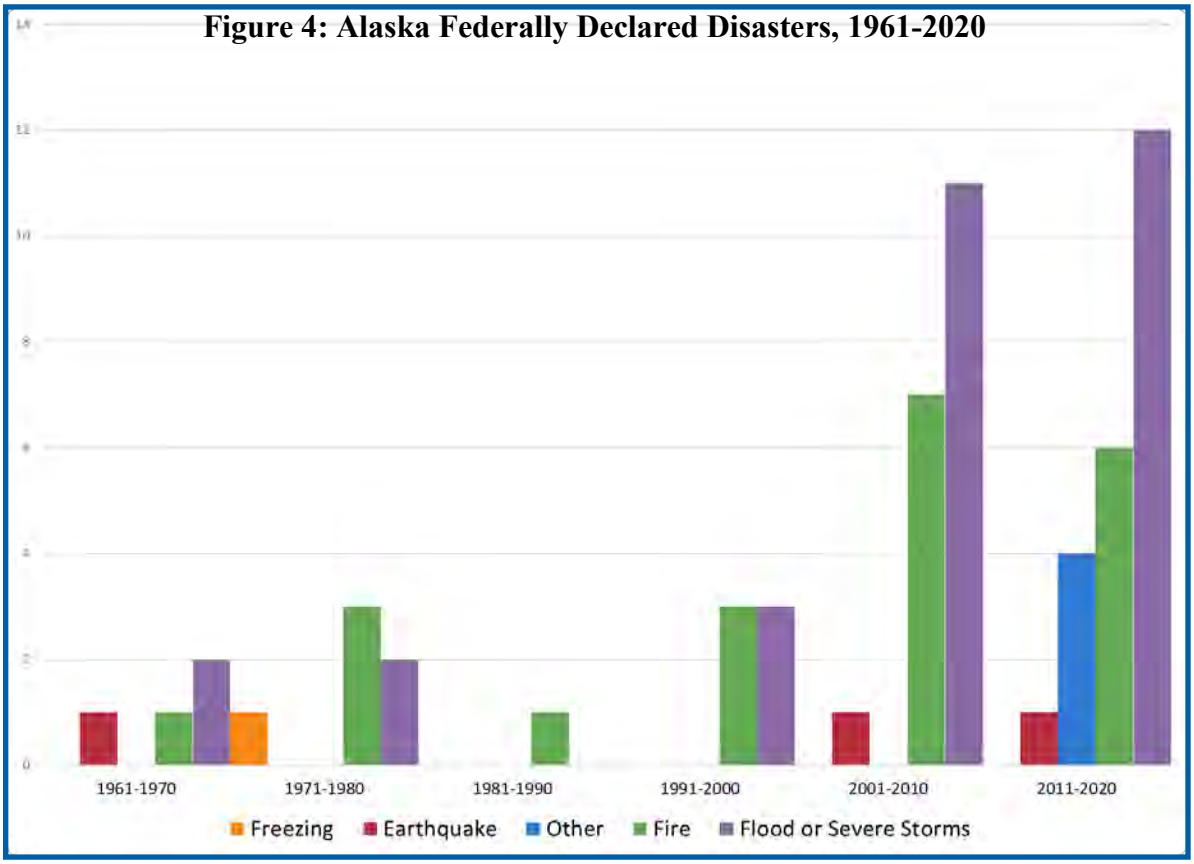
Photo: Ed Plumb, National Weather Service

Figure 3: Tsunami and Coastal Flood-Elevated Home, Lowell Point, Kenai Peninsula Borough

INTRODUCTION

The number of state- and federally-declared disasters in Alaska has increased dramatically over the past six decades, especially over the last 20 years, as in illustrated in the graph below. The majority of these disasters are caused by flooding and severe storms. Each year, these events put Alaskan communities at risk of loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in the coastal regions of Alaska. The need for a sound approach to help communities become more resilient to natural disasters is more important now than ever. The Federal Emergency Management Agency (FEMA)'s Risk Mapping, Assessment and Planning (Risk MAP) Program provides Alaskan communities with the tools, resources and technical assistance they need to achieve greater disaster resilience.

Figure 4: Alaska Federally Declared Disasters, 1961-2020



Data Source: *https://www.fema.gov/api/open/v1/DisasterDeclarationsSummaries.csv*

In order for Alaska's communities to make informed risk management decisions, a consistent risk-based approach to identifying, assessing and planning for the mitigation of natural hazards is necessary. Recognizing the connection between reliable flood maps and flood damage is essential for protecting life and property in Alaska. This is the central purpose of Risk MAP: to provide communities with flood and other hazard information and tools they can use to enhance their local plans and better protect their citizens. Through more accurate flood maps, risk assessment tools, and outreach support, Risk MAP

strengthens local ability to make informed decisions about reducing risk and becoming more disaster resilient.

Flood hazard maps produced by FEMA have been an important tool for flood hazard mitigation in Alaska's municipal governments that participate in the National Flood Insurance Program (NFIP). The State of Alaska and its local governments rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood losses. Flood hazard maps produced by FEMA currently serve 32[1] Alaska borough and city governments. Three of these cities are mapped but are currently suspended from the NFIP. Two cities and one borough are in the Emergency Phase of the NFIP and have no FEMA Flood Insurance Rate Maps (FIRM) or Flood Hazard Boundary Maps (FHBM).

Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 109[2] incorporated municipal governments (cities and boroughs) that have no FEMA FIRMs. No ordinances exist to regulate floodplain development in these cities and boroughs, nor are they eligible to receive federal flood insurance. As a result, federally-backed financial assistance may in some cases be withheld, impeding economic development opportunities. Many of these communities are highly flood-prone, resulting in costly State and federal disasters without the benefit of federal flood insurance.

Of those Alaska communities that do have FIRMs, the maps and data used to create them may be outdated. In many areas of the state, property owners have invested significant financial resources over the past 40 years to prove properties are not in floodplains as defined by FEMA. If nothing is done to improve these inaccurate maps, they will continue to cost property owners. Other property owners, who are at risk of flooding, may not be aware of their flood risk because their properties are incorrectly shown outside of the floodplains.

Alaska's floodplain mapping inventory includes many miles of mapped floodplains designated as "unnumbered A-Zones". These zones lack the engineering analysis and topographic detail needed to accurately show the floodplain. There are still a number of Alaska communities with maps that have never been updated.

[1] This includes 28 NFIP-participating borough and cities, the Cities of Kenai, Soldotna, and the City and Borough of Wrangell, that are suspended from the NFIP, and the City of Delta Junction, that withdrew from the NFIP.
[2] This includes the 106 cities and boroughs that do not participate in the NFIP, plus the 2 cities and 1 borough that participate in the NFIP but do not have FIRMs.

The Transition to FEMA's Risk MAP Program

In Federal Fiscal Year 2009, FEMA began the transition from its former mapping program, ***Map Modernization***, to ***Risk Mapping, Assessment, and Planning (Risk MAP)*** with funding from the National Flood Insurance Fund and Congressional appropriations for flood hazard mapping. FEMA's goal for Risk MAP is to combine flood hazard mapping, risk assessment tools, and hazard mitigation planning into one seamless program. Risk MAP's overall vision is to work collectively with state, local, and tribal entities to deliver quality data that increases public awareness and leads to action that reduces risk to life and property. (FEMA, 2019).

The multi-year Risk MAP process can provide a suite of services -- ranging from public outreach, trainings, technical assistance, grant assistance, and mapping -- to support community priorities toward addressing vulnerabilities to natural hazards, utilizing Federal and State resources. Major outcomes of this process are updated Flood Insurance Rate Maps (FIRMs) and multi-hazard risk assessments, along with the identification of projects, funding, training opportunities, and technical assistance that result in hazard mitigation.

Risk MAP strengthens the ability of communities to make informed local decisions about reducing risk. The Risk MAP program includes collaboration with Federal, State, and local stakeholders in communities across the nation to identify, assess, communicate, and mitigate risks. The program aims to address gaps in flood hazard data, provide an enhanced digital platform for the information that is produced, and align risk analysis programs to enhance decision-making. Risk MAP works in conjunction with other FEMA initiatives and supports the NFIP in its efforts to encourage communities to become risk aware and resilient.

Pre-Disaster Mitigation Works

The value of efforts such as Risk MAP to reducing risk was highlighted by an independent 2017 study by the National Institute of Building Sciences, co-funded by FEMA. The study found that every $1 the Federal Government invests in mitigation saves taxpayers an average of $6 in future spending. This return on investment justifies new opportunities for FEMA and its partners to reduce future disaster costs and accelerate recovery by investing now, before a disaster occurs. FEMA's Federal Insurance and Mitigation Administration has adopted the findings of this study, and seeks to increase pre-disaster mitigation investments. As FEMA strives to bring a greater share of Federal dollars to bear on pre-disaster risks, the agency also educates and incentivizes its partners to increase their investments in pre-disaster mitigation. (National Institute of Building Sciences, 2017).

ALASKA'S CHALLENGE

Alaska's enormous size is difficult to fathom. Alaska contains 586,412 square miles of land. The state is one-fifth the size of the Lower 48 states, two and one-half times larger than Texas, 488 times larger than Rhode Island, and larger than the next three larger states in the United States combined. As Figure 5 illustrates, Alaska end-to-end spans the distance from San Francisco, California to Jacksonville, Florida. Alaska has 6,640 miles of coastline, more than all other states combined.

While Alaska is the largest of the fifty states, it is also the most sparsely populated. Alaska's population density of 1.2 inhabitants per square miles (0.46/km2) ranks the lowest of the fifty states. The state population in 2020 was 733,391. *(2020 Census, US Census Bureau).*

Figure 5: Alaska's Comparative Size

Due to Alaska's vast size and sparse population, the cost of acquiring high-resolution topographic data and mapping thousands of miles of floodplain seems a daunting endeavor. Planning-level estimates indicate Alaska needs millions of dollars to acquire high-resolution topographic data and additional millions to update the current mapping inventory and convert the data to a digital GIS format. Furthermore, Alaska's rural communities are traditionally viewed as having low risk from flooding relative to the state's more urbanized communities with much larger populations. Consequently, the level of resources historically dedicated to improving maps, particularly in rural communities, has been limited. However, disaster

statistics paint a different picture. As Figure 4 on page 5 shows, federally-declared disasters for flood and severe storm events in Alaska have more than doubled over the past two decades. Figure 33 (page 99) shows the vast majority of these events have taken place in the Bethel, Kusilvak and Yukon-Koyukuk census areas. These census areas are comprised of small, remote, predominantly Alaska Native communities. The communities are especially vulnerable as they are located in Alaska's vast unorganized borough where there is no borough form of government to provide services and other resources to address disaster events. Only 9 of the 87 Alaska Native villages within these three census areas participate in the NFIP. More than half of the villages within these census areas are ineligible to participate in the NFIP because they are not incorporated municipalities. Storm events increasingly put these communities at risk to loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in western Alaska (Terenzi, 2014).

State and Federal agencies have been concerned about the impact of flooding and other natural hazards on the safety and viability of Alaska Native villages for some time. Government Accountability Office (GAO) studies conducted in 2003 and 2009 reported that 184, or 86 percent, of Alaska's 213 Alaska Native villages were affected to some degree by flooding and erosion, most commonly caused by severe storm events on Alaska's coast or by riverine flooding, such as during the spring breakup of river ice. The GAO identified 31 villages located throughout Alaska's riverine and coastal areas, which are imminently threatened by flooding and erosion. Of these villages, 12 were identified as exploring relocation options for all or a portion of the existing villages. Four of the 12 communities – Kivalina, Newtok, Shaktoolik and Shishmaref – were identified as needing to move the entire community as soon as possible.

The 2019 Statewide Threat Assessment found that 144 Alaska Native villages were at risk to some degree of infrastructure damage from erosion, flooding and permafrost thaw (UAF et al., 2019). Only 14 of these communities have completed risk assessments, and 11 have partially completed assessments (Antrobus et al., 2020). The map on page 10 shows the location of the 144 communities.

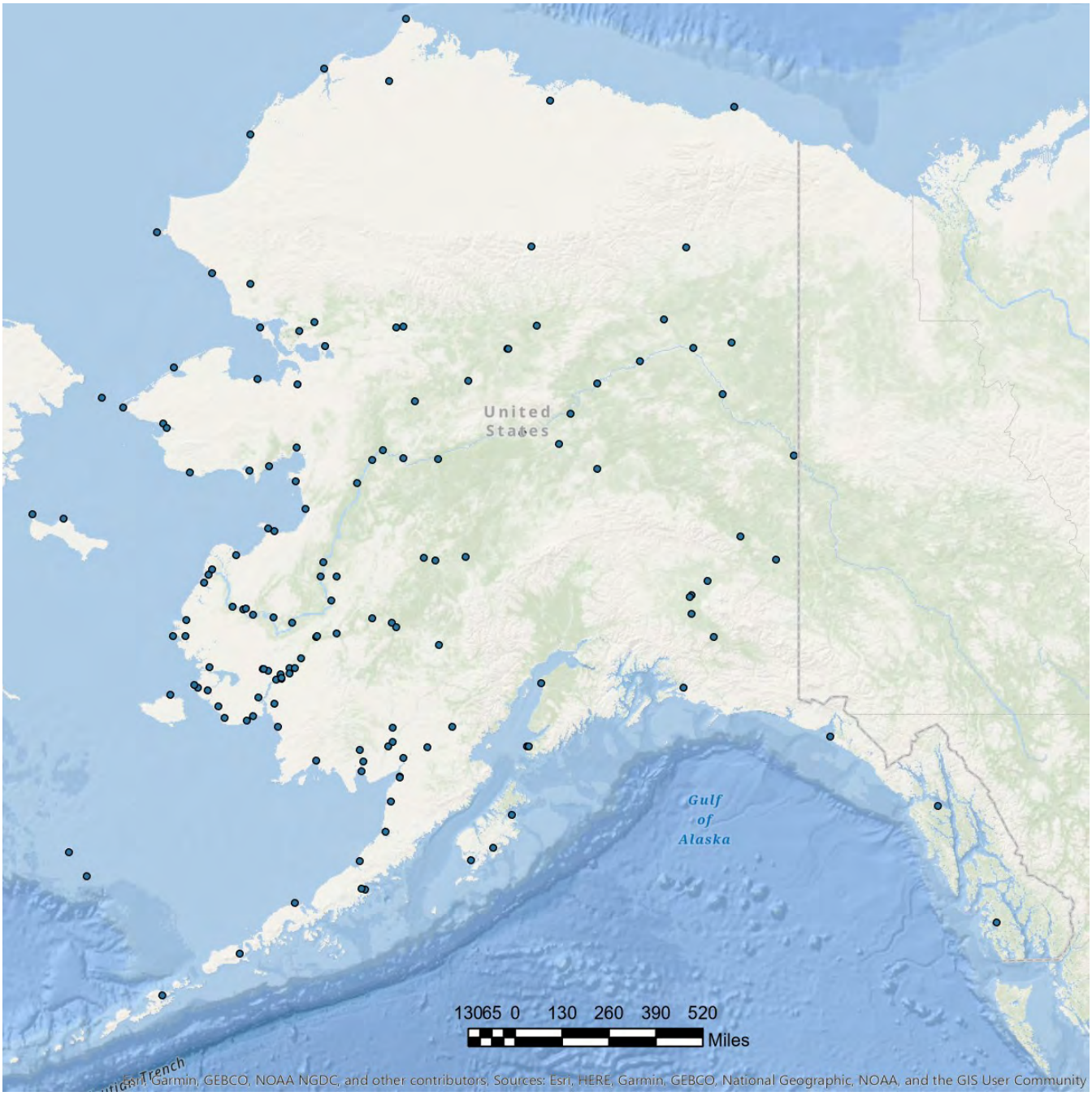
A critical challenge to Alaska's communities taking action to address their hazard issues is the glaring lack of available data. In June 2009, the Alaska Climate Change Sub-Cabinet's Research Needs Work Group reported:

> *"Native and long-time Alaskan residents describe dramatic changes in Alaska's climate and the chronic and catastrophic effects these changes are having on their lifestyles and cultures. Knowledgeable scientists, engineers, leaders, and decision-makers acknowledge that climatic changes are occurring in Alaska and have great potential, in consort with other factors, to adversely impact the natural, social, economic, and infrastructure systems that Alaskans rely upon for their way of life. Nearly everyone, however, unanimously laments the paucity of data, analyses, information infrastructure, and decision-support and sharing tools necessary for effective assessment and response to such changes."*

It is very difficult for a community to know how to respond to environmental threats without clear

understanding and guidance on the nature of the threat, what the current and predicted impacts are, and what options there are to address the threat. Alaska Native villages that have made decisions about how to respond to environmental threats have relied upon studies of the threats to provide this guidance.

Figure 6: 144 Communities at risk to some degree of infrastructure damage from erosion, flooding and permafrost thaw



ALASKA'S OPPORTUNITY

The need for high-resolution topography is not limited to floodplain mapping. High-resolution topography is a product sought by many organizations, from private enterprise to all levels of government. Many federal agencies benefit from high-resolution topographic data including the U.S. Department of Agriculture (USDA), U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration (NOAA) and FEMA. State agencies benefitting from improved floodplain mapping include the Alaska Department of Commerce, Community, and Economic Development, the Alaska Department of Military and Veteran's Affairs, and the Alaska Department of Natural Resources. Local governments participating in the NFIP, in particular, have much to gain for local residents.

DCRA and FEMA have collaborated for more than 30 years to reduce loss of life and property through strategies and programs that reduce natural hazard risk. As the designated State Coordinating Agency for the NFIP, DCRA has actively participated in studying the status of flood hazard mapping and making recommendations for updating or creating new maps.

Over the past several years, the Alaska Risk MAP Coordinator has been engaged in a number of collaborative partnerships to increase resilience in Alaska's communities. These partnerships, discussed more thoroughly on pages 104 and 115, can greatly enhance the quality of Risk MAP efforts in Alaska's communities.

DCRA values its partnership with FEMA in the implementation of the Risk MAP Program in Alaska. This partnership helps achieve DCRA's mission of ***promoting strong communities and healthy economies,*** because ***resilient communities are strong communities***. This document, ***Alaska Mapping Business Plan: Integrating Mapping, Risk Assessment, and Resilience Planning***, represents a critical step in comprehensively evaluating the status of Alaska's flood maps and hazard data, setting priorities for future hazard and mapping studies, and outlining a collaborative relationship with FEMA to fully execute the Risk MAP strategy for the benefit of Alaska's communities, local governments, tribal entities, and residents. The purpose of this document is to provide FEMA with Alaska's strategy for participation in the Risk MAP Program. The substantial investments FEMA is making in studying, analyzing and remapping large sections of Alaska could be leveraged by other government agencies to co-produce greatly improved mapping and risk assessment products that will benefit far more than just floodplain mapping programs. During the coming year this plan will be circulated to state agencies, private sector organizations, non-profits entities, and political leaders for review and comment. As this process is carried out, DCRA hopes to maintain the Alaska Mapping Business Plan as a living document that will lead to stronger support of FEMA's Risk MAP Program and new partnerships to increase community resilience in the future.

Figure 7: Storm damage in the Village of Kotlik, Alaska, November 2013

CHAPTER ONE: FEMA'S RISK MAP PROGRAM

FEMA's flood hazard maps are one of the essential tools for flood hazard mitigation and implementation of the NFIP in the United States. These maps are used an estimated 20 million times annually in the private and public sectors. Lending institutions and insurance companies use them to identify who needs flood insurance and to determine flood insurance rates. Community planning officials, land developers, and engineers use them for designing new buildings and infrastructure to avoid flooding. Most importantly, states and communities use them for hazard mitigation planning and emergency management. Finally, federal agencies use them when implementing Executive Order 11988, Floodplain Management, which requires federal agencies to avoid short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

FEMA's Map Modernization (Map Mod) effort transformed most of the nation's flood hazard mapping inventory to 21st century digital technology and restored confidence in the reliability of floodplain boundaries, while making some updates to underlying engineering data. Map Mod's large-scale overhaul of the nation's flood hazard maps included data collection and analysis, map production, product delivery, and program management activities. Map Mod provided reliable digital flood hazard data and maps for approximately 92% of the nation's population.

The dynamic nature of floodplains requires ongoing analysis of flood hazards to maintain a reliable and valid data inventory. Failing to keep current with the changing and dynamic nature of watersheds ultimately leads to unwise decisions that place homeowners and communities at increased risk of flooding. Conversely, overstated hazards not based on accurate data can result in potentially unnecessary construction costs and incorrect insurance rating decisions. Accurate and reliable flood hazard information is a necessary component of ensuring the fiscal soundness of the NFIP.

In order to leverage the successes of Map Mod and further enhance the use, value, and accuracy of flood hazard mapping and related data, FEMA developed the Risk MAP Program. Risk MAP represents a philosophical and tactical shift in how FEMA delivers information necessary for flood hazard reduction . The focus has shifted from digitizing maps (Map Mod) to evaluating flood hazard data needs, meeting flood hazard data needs, expanding data availability, and improving data accessibility.

FEMA began the transition from Map Mod to Risk MAP during federal fiscal year 2009. Risk MAP combines flood hazard mapping, risk assessment and mitigation planning into one seamless program. It is an improved and integrated approach where hazards are identified and woven into watershed-based risk assessments and state/local mitigation plans. The intent of Risk MAP is to encourage partnerships and innovative uses of flood hazard and risk assessment data in order to reduce flood and other hazard risk.

Vision

Risk MAP's overall vision is to work collectively with state, local, and tribal entities to deliver quality data that increases public awareness and leads to action that reduces risk to life and property. (FEMA, 2019).

Figure 8: Risk MAP Vision

Regional Priorities

FEMA Region 10 has set the following regional priorities for Risk MAP Cooperating Technical Partners:

- The ability as a Risk MAP partner to utilize/leverage Risk MAP products that have or will be developed to integrate into a community's or tribe's every day risk reduction decision making.
- Identify local priorities and needs that overlap with the goals of Risk MAP, including addressing unmet flood hazard analysis and mapping needs.
- The ability to identify and advance mitigation projects in communities or tribes.
- Supporting the region's ability to collect field survey and/or LiDAR collection cost-effectively for future flood mapping production and mitigation action.
- Projects that help the Region assess its New, Validated, and Updated Engineering (NVUE) floodplain miles and decrease paper inventory.
- Promote multiple benefit studies (i.e., multi-hazard, climate change, endangered species, etc.) in relation to Risk MAP.

FEMA Region 10 Risk MAP Process

FEMA Region 10 has developed a graphic of the Risk MAP process which can be viewed online at: https://www.commerce.alaska.gov/web/Portals/4/pub/RiskMAP/R10_Risk_MAP_Process_Graphic.pdf
The Risk MAP process graphic focuses on Risk MAP's three primary components,

- **Mapping:** Flood Insurance Rate Maps and Flood Insurance Studies
- **Assessment:** Hazard risk assessment and modeling
- **Planning:** Strategy implementation and plan integration

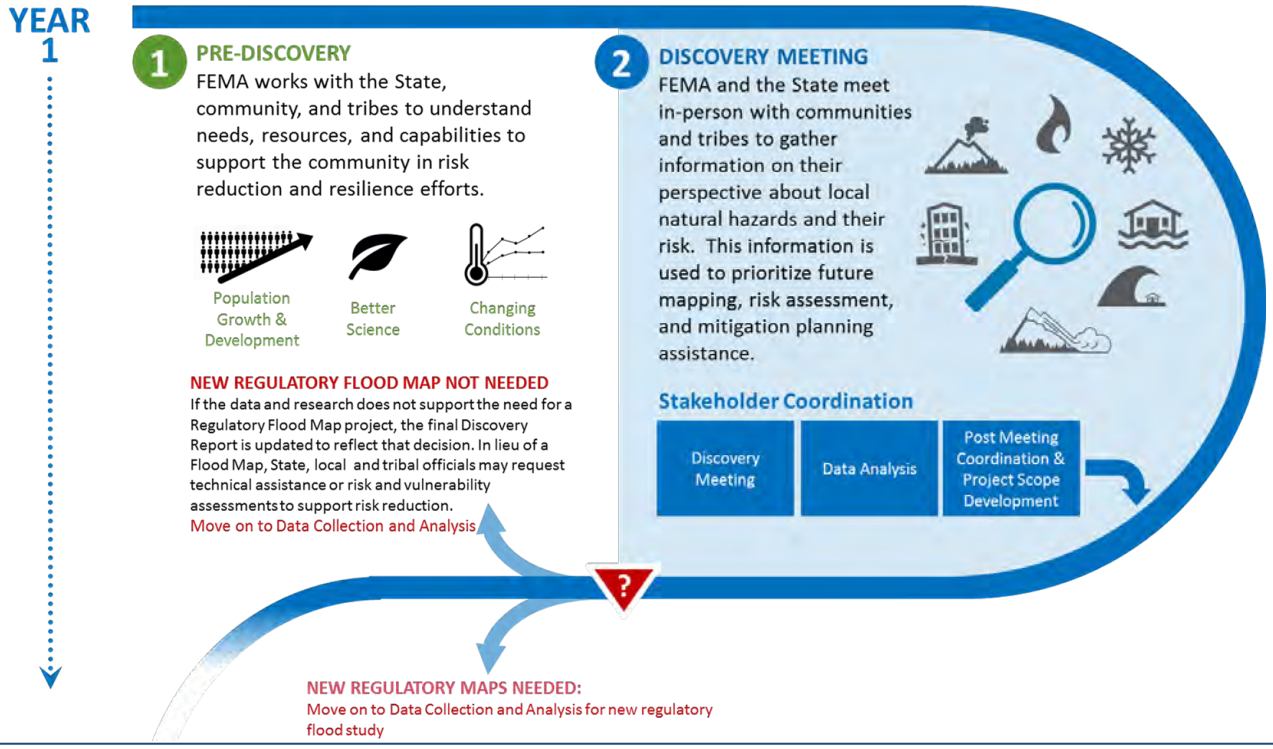
The process graphic illustrates the major phases of the multi-year Risk MAP process, which are described in detail here, beginning with Discovery:

Discovery

Discovery is the first part of the Risk MAP Process. After the State prioritizes a watershed for Discovery based on evaluations of risk, need, availability of elevation data, regional knowledge of issues, and local input, the communities within the watershed are asked if they would like to participate in a Risk MAP study.

The State Risk Map Coordinator will engage with the community to 1) identify that the community is interested in Risk MAP; 2) identify how the Risk MAP effort will align with local planning processes such as comprehensive planning, natural hazard mitigation planning, fire adaptation planning, and so forth; 3) identify the general natural hazard themes the community whished to focus on for the Discovery Meeting, and 4) identify an approximate timeline for hosting the Discovery Meeting. The process to collect data

Figure 9: Discovery



regarding local flood and other hazard risks will begin at this initial stage. FEMA has data on national and regional levels, however FEMA relies heavily on information and data provided by communities because local officials are able to provide a holistic view of their communities and their known risks. This provides a great opportunity to integrate local knowledge into the data collection process.

Discovery Meeting

During the Discovery Meeting, FEMA and the State will meet in-person with communities and tribes to gather information on their perspective about local natural hazards and their risk. Typically, FEMA will bring large, paper maps of the community to the Discovery Meeting and residents will be asked to mark up the maps based on their knowledge of local hazards. This information is used to prioritize future mapping, risk assessment, and mitigation planning assistance.

Post Discovery Meeting Coordination and Project Scope Development

If it is determined during Discovery that a Risk MAP project is appropriate for the community and the project involves flood engineering analysis, the project team will conduct additional coordination with the impacted community to discuss anticipated changes to the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS). If the data and research does not support the need for a Regulatory Flood Study (FIRMs and FIS), local and tribal officials may request technical assistance or risk and vulnerability assessments to support risk reduction.

Prior to work starting on any risk assessment or flood insurance study mapping, a meeting must be held with the community to share the scope of work and explain the deliverables resulting from the project. In addition to sharing the Scope of Work at this meeting, FEMA provides a Partnership Agreement to the community, a non-binding document that outlines roles and responsibilities during the Risk MAP study.

Discovery Report

The Discovery Report includes a section listing the data and information collected, including what data and information were received, when it was received, data sources, and an analysis of the data and information. A draft Discovery Report will be provided to the community and other stakeholders to review. The final version of the Discovery Report will outline the scope of work for the Risk MAP project agreed upon by FEMA, the State and the community.

Data Collection and Analysis

During this phase of the Risk MAP process, funding will be secured for the project and local multi-hazard data will be collected. If the community participates in the National Flood Insurance Program and it has been determined that new regulatory floods maps are needed, LiDAR data will be collected and a regulatory flood study will be conducted.

Whether or not the Risk MAP project involves a regulatory flood study, the community will have the opportunity to have a series of risk and vulnerability assessments conducted which will result in non-

regulatory products and tools that can inform local decision-making regarding risk. For hazards that FEMA doesn't directly address, the community can apply to the Cooperating Technical Partners Grant Program for funding to assess hazards such as erosion, landslide, avalanche and others. The information from these hazard assessments will be included in the final Risk Report for the Risk MAP study.

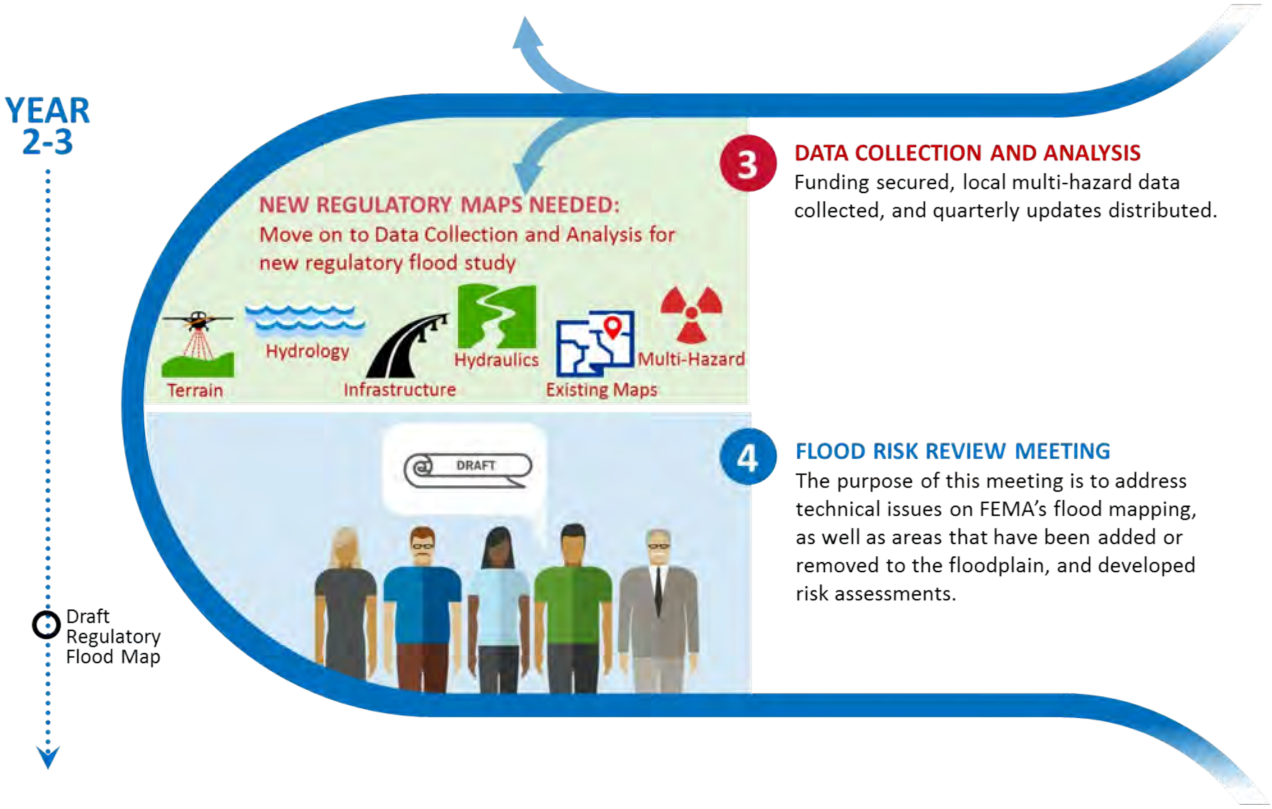
Draft Workmaps

If it has been determined that new regulatory floods maps are needed, Draft Workmaps will be prepared during this phase of the Risk MAP process. Draft Workmaps are an interim product that FEMA shares with communities in advance of the release of the preliminary Flood Insurance Rate Maps (FIRMs) to get early input on the mapping and underlying data.

Flood Risk Review Meeting

Following the release of Draft Workmaps, FEMA and the State will hold a Flood Risk Review (FRR) Meeting with the local jurisdiction. The FRR Meeting provides local officials with an opportunity to review and ask questions about the flood study and its results. The meeting allows the project team to highlight the flood risk associated with the study so that local officials can begin communicating that risk to impacted residents and businesses. The FRR Meeting also gives local officials the opportunity to comment on areas where they believe risks are inappropriately mapped (understated or overstated). By identifying concerns early in the map development process, FEMA can avoid delays and costly revisions to the preliminary FIRMs following their release.

Figure 10: Data Collection and Analysis



Risk Reduction

During the Risk Reduction phase, the project team will share the results of the risk assessments that have been conducted as well as the draft Risk Report with the community and begin to identify strategies for risk reduction. For communities undergoing a regulatory Flood Insurance Study (FIS), preliminary Flood Insurance Rate Maps (FIRMs) will be produced and the regulatory process will begin for the adoption of the new FIRMs and FIS.

Risk Report

The Risk Report provides non-regulatory information to help local officials, floodplain managers, planners, emergency managers, and others better understand their natural hazard risk, take steps to mitigate those risks, and communicate those risks to their citizens and local businesses. Because the natural hazards often extend beyond community limits, the Risk Report provides hazard data for the entire Risk MAP project area as well as for each individual community. This also emphasizes that natural hazard risk reduction activities may impact areas beyond jurisdictional boundaries. Natural hazards are always changing, and there may be other studies, reports, or sources of information available that provide more comprehensive information.

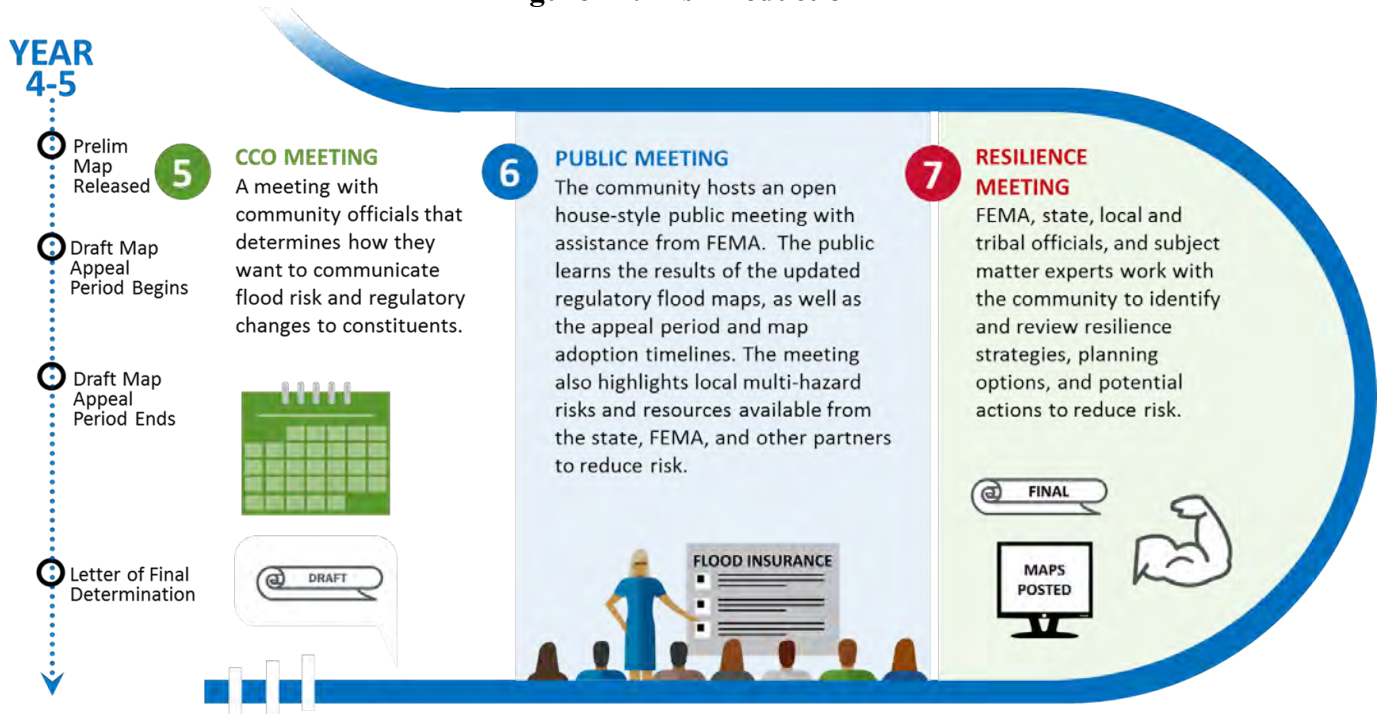
The Risk Report is not intended to be regulatory or the final authoritative source of all natural hazard data in the project area. Rather, it should be used in conjunction with other data sources to provide a comprehensive picture of natural hazard risk within the project area.

Preliminary Flood Insurance Rate Maps and Study

The release of the Preliminary Flood Insurance Study, Maps and Data is an important step in a community's flood mapping process. There are several benefits for the public and professionals in viewing their community's preliminary data before it becomes an effective FIRM:

- It allows the public to voice their opinions or concerns regarding how the data may affect them or to question data accuracy
- Insurance agents can compare existing FIRMs with preliminary FIRMs to see how their clients may be affected. However, policies cannot be written using preliminary data
- Loan and mortgage brokers can use preliminary data as a guide to determine whether a property may be mapped into a high-risk area, allowing the borrower to be informed of any changes or requirements before finalizing the loan
- Real estate agents and brokers can determine what changes are likely to occur and how it might affect any properties for sale
- Engineers, developers and builders can plan for safer construction

Figure 11: Risk Reduction



Consultation Coordination Officer (CCO) Meeting

After the release of preliminary FIRMs and the FIS report, FEMA holds meetings to present them first to community officials at the CCO Meeting. Any changes in flood risk will be explained and meeting participants will have an opportunity to provide feedback on the products. This is also the meeting where public outreach needs are discussed.

The CCO Meeting is required by Federal law - **44 CFR 66.5 (f):**

(f) The community shall be informed in writing of any intended modification to the community's final flood elevation determinations or the development of new elevations in additional areas of the community as a result of a new study or restudy. Such information to the community will include the data set forth in paragraph (e) of this section. At the discretion of the Regional Administrator in each FEMA Regional Office, a meeting may be held to accomplish this requirement.

Public Open House Meeting

Once the preliminary FIRMs are released, the CCO meeting is held, and the 90-day appeal period is started, there is often a request for a public meeting. Most communities request and FEMA likes to support a public open house to help get the word out about the changes to the flood maps and to provide an opportunity for the community to get their questions answered on whether they are in a floodplain, what the flood insurance requirements are, and what the regulations are for floodplain development in these areas.

The format of the public meeting is an open house with a 15-minute simplified overview of the NFIP, the flood study, and the study process. The open house format is explained and an explanation is given of what questions can be answered at tables where subject matter experts are present.

Resilience Meeting

Risk MAP communities may choose to hold a Resilience Meeting to discuss the products and tools of the Risk MAP process. The Resilience Meeting is held in the community and led by FEMA, the State Risk MAP Coordinator and the Risk MAP Project Team. The meeting combines building-level analyses of hazard impacts with available resources. Information about FEMA programs, technical and administrative expertise from the State, and local knowledge of capacity is shared in an effort to help the community identify high-priority risk-reduction actions, and connect those actions to appropriate funding mechanisms. Before the Resilience Meeting, FEMA holds a webinar with prospective attendees of the Resilience meeting to review the content and results of the Risk Assessment, which helps prepare attendees for the Resilience Meeting.

During the first portion of the Resilience Meeting, State and Federal staff provide presentations covering:

- The Risk MAP Process Overview
- Hazard Data
- Risk Assessment Results
- Mitigation Actions
- Potential Funding Opportunities

In the second part of the Resilience Meeting, communities work with State and Federal staff to discuss local hazard concerns, mitigation priorities, implementation timelines, and funding opportunities. After the Resilience Meeting is held, mitigation actions and other information identified during the workshop will be integrated into the draft Risk Report, which will be finalized and presented to the community.

Figure 12: City of Seward Resilience Workshop

Resilience

During this final phase of the Risk MAP process, FEMA and the State Risk MAP Coordinator will work with the community to integrate Risk MAP information into local plans, implement the actions identified during the Resilience Meeting, and seek funding to implement projects identified during the Risk Reduction Phase. The State Risk MAP Coordinator may hold quarterly teleconferences to check-in with the community and notify local officials of progress on mitigation efforts.

During this phase, Risk MAP products and tools can inform or lead to a number of efforts including the following:

- New or Updated Hazard Mitigation Plan
- Infrastructure Mitigation Projects
- Housing Mitigation Projects
- Updated Building and Zoning Codes
- Local Land Use Plan
- Community Comprehensive Plan
- Analyses to protect-in-place, migrate infrastructure or to relocate

Figure 13: Resilience

Cooperating Technical Partners Program

Central to FEMA's Risk MAP Program is collaboration and cooperation established by mapping partnerships with state, local, and tribal entities to update flood hazard data and maps. The Cooperating Technical Partners (CTP) Program is an innovative approach to creating these partnerships between FEMA and participating local communities, regional entities, tribes, and state agencies that have the interest and capability to become more active participants in the FEMA flood hazard mapping program.

The Cooperating Technical Partners (CTP) Program was developed by FEMA for State, local, regional, or tribal organizations and universities with the interest, capability, and resources to be active partners in FEMA's flood hazard mapping program. By becoming a CTP, a partner formalizes its contribution and commitment to the program ensuring better overall flood risk identification through the development of reliable and up-to-date flood maps.

In addition to the State of Alaska, participating CTP communities in Alaska include the Municipality of Anchorage, the City and Borough of Juneau, the Matanuska Susitna Borough, and the Fairbanks North Star Borough.

Objectives of the CTP Program

The overall objective of the CTP Program is to update the Nation's flood maps through the following tasks:

- Recognize partners that are actively working to identify and map their flood risk while incorporating this information into official FEMA flood hazard data
- Maximize limited funding by combining resources and aligning State, local, regional, and tribal local goals with FEMA's national objectives
- Maintain national standards consistent with National Flood Insurance Program (NFIP) regulations
- Build and maintain partner capabilities.

Benefits of Participation in the Program

The advantages and benefits of being a CTP include:

- Develop more detailed maps by incorporating local geospatial data into FEMA's flood hazard maps
- Receive streamlined FEMA customer service, access to existing FEMA data, national recognition, technical assistance, and FEMA's Mapping Information Platform (MIP)
- Mentoring support, shared best practices, online resources, and free training to achieve more efficient and effective flood risk development
- May be eligible to participate in the FEMA Community Rating System (CRS) and receive CRS credits for flood hazard reduction activities, which may result in discounted flood insurance premiums for property owners

CTP Relationship to Risk MAP

Through the Risk MAP Program, CTPs will continue to be involved with the creation of flood hazard data, but will also be involved with the risk assessment and planning activities within Risk MAP. CTPs are encouraged to create partnerships and relationships within their organization, especially with groups responsible for risk assessment and planning activities. These strategic partnerships at the State or local level enable FEMA and its partners to accomplish Risk MAP's goals.

Figure 14: Potential CTP Partner Life Cycle

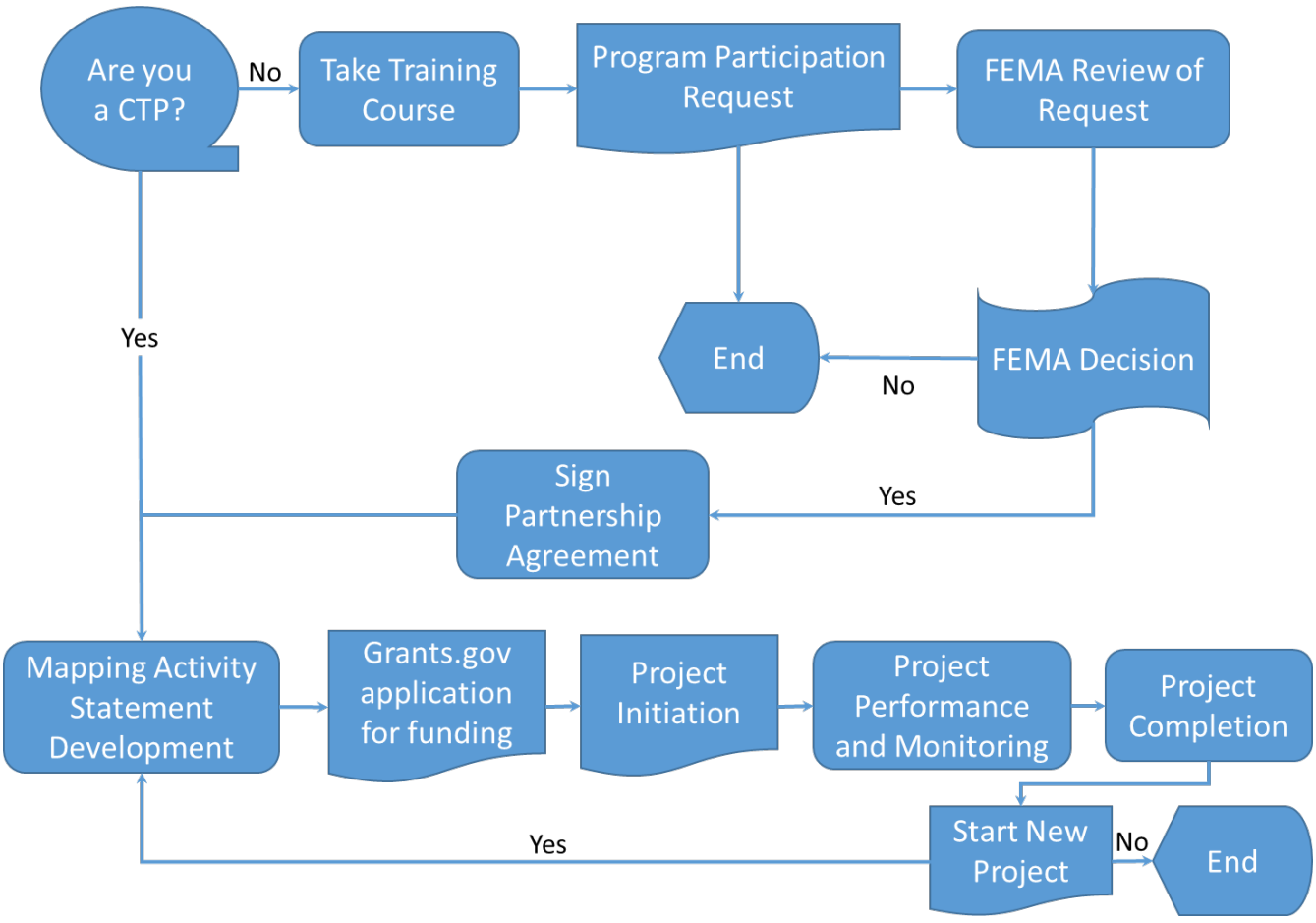


Figure 15: Flooding in Wasilla, Alaska Neighborhood, 2012

Photo: Jon Burn, Battalion Chief, Matanuska-Susitna Borough Fire Department

CHAPTER TWO: THE NFIP AND FLOOD HAZARD MAPPING

National Flood Insurance Program

In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The Flood Insurance and Mitigation Administration (FIMA), a component of FEMA, manages the NFIP. The NFIP includes three primary components: 1) flood insurance; 2) floodplain management; and 3) flood hazard mapping.

More than 22,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities. Of noteworthy importance, community participation in the NFIP is voluntary.

Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage is reduced by nearly $1 billion a year through communities implementing sound floodplain management requirements and property owners purchasing of flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance.

Joining the NFIP is a large benefit to local residents due to low-cost flood insurance, but it is also a large responsibility for municipalities. To participate in the NFIP, local governments agree to complete the following:

- Adopt and enforce a flood damage prevention ordinance
- Require permits for all types of development in the floodplain
- Assure building sites are reasonably safe from flooding
- Estimate flood elevations that were not determined by FEMA
- Require new or improved homes to be elevated above Base Flood Elevation (BFE)
- Require other buildings to be elevated or flood-proofed
- Conduct field inspections and city violations
- Require Elevation Certificates to document compliance
- Carefully consider variances
- Resolve non-compliance and violations
- Advise FEMA when updates to flood maps are needed

Flood Hazard Mapping

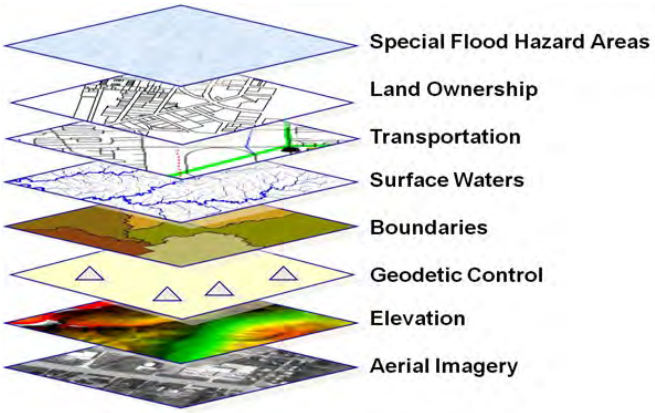
In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. These maps are Flood Insurance Rate Maps, commonly referred to as FIRMs. Each NFIP community should have or be in the process of having FIRMs for their community.

Communities regulate the floodplain for a variety of reasons, but some of the most important reasons include: 1) protect people and property; 2) ensure federal flood insurance and disaster assistance is available; 3) save tax dollars; 4) avoid liability and litigation; and 5) reduce future flood losses. Participation in the NFIP is based on an agreement between a local government and the federal government. If a community adopts and enforces a floodplain management ordinance that meets program standards, the federal government will make flood insurance available within the community at a low cost.

Digital Flood Insurance Rate Maps and Geographic Information Systems

The NFIP has adopted new digital products, including Geographic Information System (GIS)-based products. While continued use of the legacy paper FIRMs is allowed, NFIP stakeholders interested in adopting the digital processes can take full advantage of the digital maps FEMA is producing through the Risk MAP program. FEMA's goal is to transition to digital processes for distributing and reading the flood maps. The digital capabilities of the flood maps:

- Enable significant advantages in capability, precision, and cost
- Reduce costs associated with paper map production, handling and storage
- Encourage the use of quality local data to make administration of the NFIP more efficient and effective



The Standard Digital Flood Insurance Rate Map (DFIRM) Database is a digital version of the FEMA flood insurance rate map that is designed for use with digital mapping and analysis software. DFIRM Databases have been completed for a number of communities and counties throughout the nation. FEMA designed the DFIRM Database product to be used with (GIS) software.

GIS software allows users to access, view, and analyze mapping information using specialized data. The Standard DFIRM Database is designed to provide the user with the ability to determine the flood zone, base flood elevation and the floodway status for a particular location. It also has NFIP community information, map panel information, cross section and hydraulic structure information,

Coastal Barrier Resource System information (if applicable), and base map information like road, stream, and public land survey data.

Coordinated Needs Management Strategy (CNMS)

The CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. It defines an approach and structure for the identification and management of flood hazard mapping needs that will provide support to data driven planning and the flood map update investment process in a geospatial environment. CNMS tracks the lifecycle of needs, specifying opportunities to capture needs and proposing methods for their evaluation to inform the planning process.

From a technical perspective, the CNMS establishes a geospatially enabled effective means for users to enter, monitor, and update their inventory of needs. The basic structure of the database is two containers: one to store information about why and where effective studies are "broken", and the other to record community concerns and requests. All information can be displayed simultaneously because they are geo-referenced.

The goal of the CNMS is to define the validity of the engineering study data, at the stream level, within the communities mapped. Participating communities coordinate with the FEMA Regional Office to have all flooding source centerlines included in CNMS and to have every segment contained in the CNMS stream network defined as valid, invalid, or in progress. The intent of having this information is to define the mapping need of each engineering study, determine the validity of the engineering study, and time-stamp the engineering study. Overall, FEMA wants to establish a national baseline record of New, Validated or Updated Engineering (NVUE) reporting geospatially that will influence future program production planning activities.

Through the CNMS, FEMA is evaluating its inventory of stream and coastal miles nationwide and establishing which miles meet NVUE. FEMA has committed to the US Congress that 80% percent of the miles in its inventory will meet this standard. Currently, based on a countywide evaluation of NVUE data, FEMA estimates that 51% of its inventory is compliant with NVUE nationwide. To reach 80%, FEMA will restudy 183,000 miles of stream or coastline nationwide during Risk MAP. CNMS is in its infancy, and the data will be updated over the next year, based on a on a stream reach-by-stream-reach and coastal-reach-by-coastal-reach evaluation of its inventory. This will cause the current estimate of NVUE-compliant miles to change.

In order to be compliant with NVUE quality standards, a stream must be digital (modernized) and be characterized by one of the following:

- A new detailed study, or
- A new approximate study based on topography, or
- An old detailed study that has been updated, or

- An old approximate study that has been updated.

The initial CNMS database is being created at a national level by FEMA headquarters and its contractors. Since CNMS is going to play such an important role in prioritization, it is essential that this database is built properly. It must be maintained and updated frequently to assure accuracy and to demonstrate the appropriate levels of need.

As noted in the chapter on the ***Alaska Prioritization and Future Studies Sequencing Decision Support System*** (page 140) the CNMS data for Alaska currently shows that all stream miles are Non-NVUE compliant, thus all watersheds have been given the same rank for this indicator in the decision support system. Additionally, FEMA's contractor STARR indicated that the only streams currently included in CNMS for the State of Alaska are those currently in DFIRM format. This excludes a large number of streams and makes this dataset incomplete. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs Factor in DCRA's decision support system.

Figure 16: City of Nenana, 2008 Flood

Chapter Three: Alaska's NFIP-Participating Local Governments

Floods have been, and continue to be, a destructive natural hazard in terms of economic loss to Alaska's local governments and the residents that live in these communities. Flooding is of great concern in Alaska because there are more than 3,000 rivers, over 5% of Alaska's land area is covered with glaciers, and more than 40,000 miles of coastline provide a multitude of opportunities for flooding. Unfortunately, residents of many flood-prone Alaskan communities do not have flood insurance even though they may live near water. One hundred-nine or 66 %[1] of Alaska's 164 incorporated communities do not participate in the NFIP.

Slightly more than one-third (34%) of Alaska's 164 incorporated municipalities participate in the NFIP. In addition to the 31 NFIP-participating cities and boroughs, 24 cities located within the jurisdictional boundaries of participating boroughs enjoy the benefits of NFIP participation. Three municipalities (2 %) participate in the NFIP (Kenai, Soldotna, and Wrangell) but are considered "suspended" and thus are not eligible for federal flood insurance. The City of Delta Junction made the decision to withdraw from the NFIP in 2015.

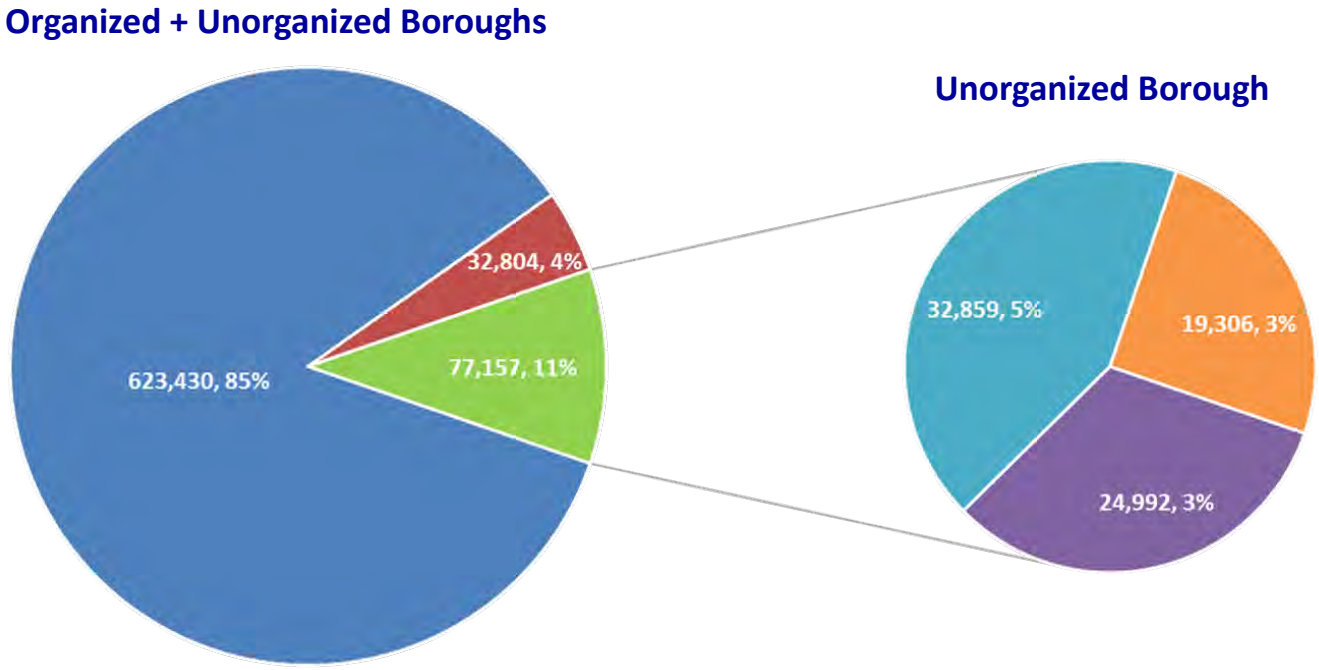
It is noteworthy; however, that the majority of Alaska's population resides within the 55 communities that participate in the NFIP. As Figure 17 illustrates on the next page, 88 percent of Alaska's population participates in the NFIP. Eighty-five percent of Alaska's population residing in organized boroughs participates in the program, and three percent of the state population residing in cities in the unorganized borough participates in the NFIP.[2]

When Alaska's Unorganized Borough is considered alone, however, the figures tell a slightly different story. Only 32% of the state population living in Alaska's Unorganized Borough participate in the NFIP. Forty-three percent of the population living in cities in the Unorganized Borough do not participate in the NFIP and 25% of the population living in unincorporated villages do not. It is of concern that most of Alaska's federally-declared disasters involving flood or severe storm events have occurred in the Unorganized Borough within the Bethel, Kusilvak and Yukon-Koyukuk Census Areas. (See Figure 33, page 99.)

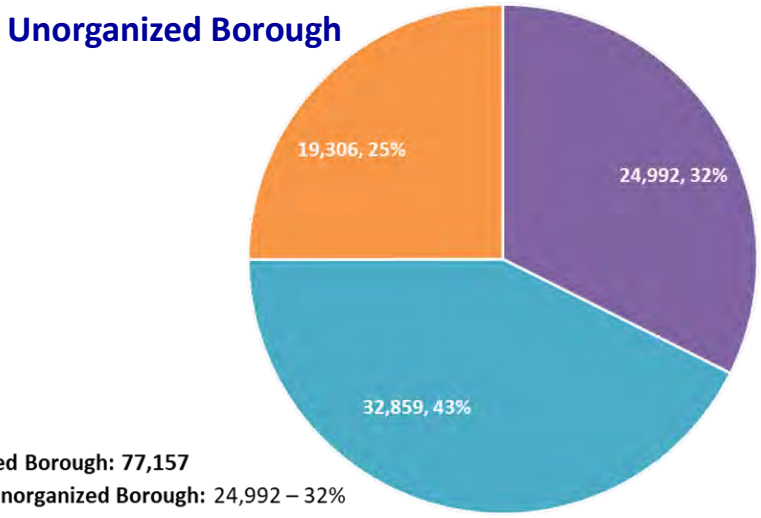
Figure 18, page 31, provides a map identifying the locations of the 12 boroughs and 19 cities that participate in the NFIP. Table 1, page 33, provides a listing of the boroughs and cities participating in the NFIP.

[1] This includes the 3 communities, the Cities of Kenai, Soldotna, and Wrangell, that are suspended from the NFIP, and 1 community, the City of Delta Junction, that withdrew from the NFIP.
[2] All Alaska population data from the 2020 Census, US Census Bureau.

Figure 17: Percentages of Alaska's NFIP and Non-NFIP Populations in Organized and Unorganized Boroughs



Total State Population: 733,391 *2020 Census Data*
Total Population Organized Boroughs: 656,234 – 90%
- **NFIP Population Organized Boroughs:** 623,430 - 85%
- **Non-NFIP Population Organized Boroughs:** 32,804 - 4%
- **Total Population Unorganized Borough:** 77,157, - 11%
- **NFIP City Population Unorganized Borough:** 24,992 – 3%
- **Non-NFIP City Population Unorganized Borough:** 32,859 – 5%
- **Non-NFIP Unincorporated Community Population Unorganized Borough:** 19,306 – 3%

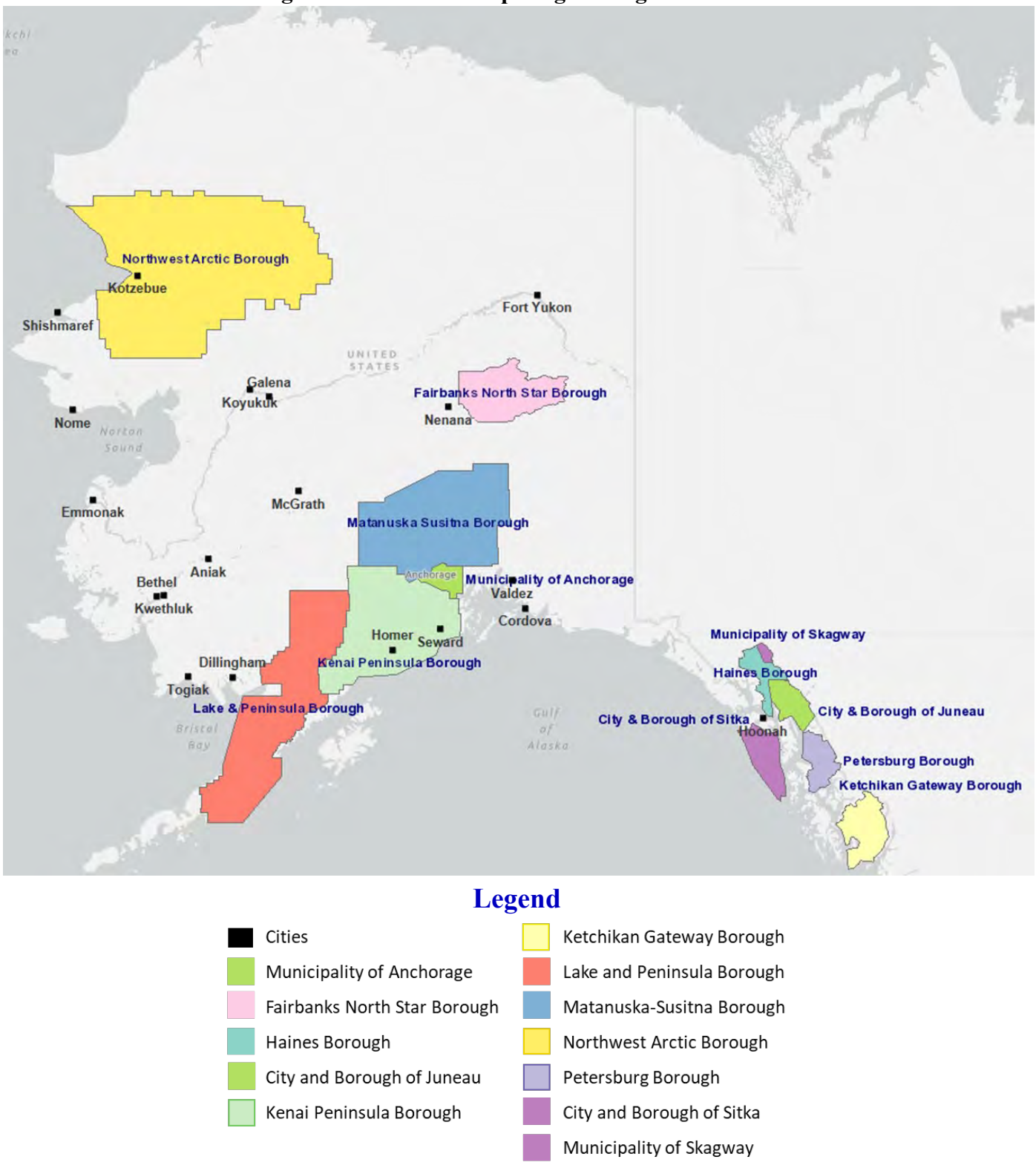


Total Population Unorganized Borough: 77,157
- **NFIP City Population Unorganized Borough:** 24,992 – 32%
- **Non-NFIP City Population Unorganized Borough:** 32,859 – 43%
- **Non-NFIP Unincorporated Community Population Unorganized Borough:** 19,306 – 25%

Data Source: *2020 Census Data., US Census Bureau*

Twelve boroughs* and 19 cities participate in the NFIP. The location of these municipalities is shown on the map in Figure 18, below.

Figure 18: NFIP Participating Boroughs and Cities



NFIP Community Characteristics

The average population of a NFIP-participating community is 20,917 residents (2020 Census Data). Compared to all Alaska municipalities, NFIP municipalities are generally more urban or semi-urban in character, have larger populations, experience less dramatic population swings, have higher per capita income, and lower poverty rates.

Local Government

Ninety-six percent of the NFIP-participating population is located within borough governments; four percent is located within city governments. Of the 19 NFIP city government participants, the majority (16) are not located within an organized borough. In other words, these communities are without a regional form of government.

Population

As municipalities that are enrolled in the NFIP tend to be more urban in character, they have also experienced slightly less dramatic population swings during the 2010 to 2020 time period. Nearly two-thirds of NFIP-participating communities (20 of 31 or 65%) increased in population over the past ten years. On average, NFIP participants grew 3.34 % from 2010 to 2020. Population growth has ranged from .23% (City of Valdez) to 28.10% (Municipality of Skagway). During this same time period, 9 NFIP-participating communities declined in population. Population decline ranged from -.20% (Municipality of Anchorage) to -26.59% (City of Fort Yukon). In total, nearly one-third (29%) of NFIP participants experienced population losses during the 2010 to 2020 period. The City of Togiak's population remained the same. In general, the rural and urban population change divide among NFIP communities remains consistent with statewide trends, with the more rural NFIP participants generally experiencing greater population losses than the more urban NFIP communities.

Table 1: NFIP Participating Communities in Alaska

Community Participation	NFIP Participant	Municipal Govt.	#Communities	%
In Program	City of Aniak	19 cities	55	34%
	City of Bethel			
	City of Cordova			
	City of Dillingham			
	City of Emmonak			
	City of Fort Yukon			
	City of Galena			
	City of Homer			
	City of Hoonah			
	City of Kotzebue			
	City of Koyukuk			
	City of Kwethluk			
	City of McGrath			
	City of Nenana			
	City of Nome			
	City of Seward			
	City of Shishmaref			
	City of Togiak			
	City of Valdez			
	Municipality of Anchorage	12 Boroughs plus 24 Cities located within the boundaries of the 12 Boroughs		
	Fairbanks North Star Borough			
	Haines Borough			
	City and Borough of Juneau			
	Kenai Peninsula Borough			
	Ketchikan Gateway Borough			
	Lake and Peninsula Borough			
	Matanuska-Susitna Borough			
	Northwest Arctic Borough			
	Petersburg Borough			
	City and Borough of Sitka			
	Municipality of Skagway			
Suspended - In Program	City of Kenai	2 Cities, 1 Borough suspended	3	2%
	City of Soldotna			
	City and Borough of Wrangell			
Withdrawn	City of Delta Junction		106	64%
Not in Program	10 First Class Cities, 87 Second Class Cities, 2 Home Rule Cities, 3 Home Rule Boroughs, and 3 Second Class Boroughs, 1 Reservation Organized Under Federal Law			
Total			164	100%

Table 2: NFIP Local Government, Population and Population Change

NFIP Participant	Incorporation Type	Unorganized Borough	Census Pop. 2010 [1]	Census. Pop. 2020[1]	2010-2020 Pop. Change
Municipality of Anchorage	Unified Home Rule Municipality	No	291,826	291,247	-0.20%
Fairbanks North Star Borough	2nd Class Borough	No	97,581	95,655	-1.97%
Haines Borough	Home Rule Borough	No	2,508	2,080	-17.07%
City and Borough of Juneau	Unified Home Rule Municipality	No	31,275	32,255	3.13%
Kenai Peninsula Borough	2nd Class Borough	No	47,704	50,560	5.99%
Ketchikan Gateway Borough	2nd Class Borough	No	13,477	13,948	3.49%
Lake and Peninsula Borough	Home Rule Borough	No	1,631	1,476	-9.50%
Matanuska-Susitna Borough	2nd Class Borough	No	88,995	107,081	20.32%
Northwest Arctic Borough	Home Rule Borough	No	4,322	4,691	8.54%
Petersburg Borough	Non-Unified Home Rule Borough	No	3,203	3,398	6.09%
City and Borough of Sitka	Unified Home Rule Municipality	No	8,881	8,458	-4.76%
Municipality of Skagway	1st Class Borough	No	968	1240	28.10%
City of Aniak	2nd Class City	Yes	501	507	1.20%
City of Bethel	2nd Class City	Yes	6,080	6,325	4.03%
City of Cordova	Home Rule City	Yes	2,239	2,609	16.53%
City of Dillingham	1st Class City	Yes	2,329	2,249	-3.43%
City of Emmonak	2nd Class City	Yes	762	825	8.27%
City of Fort Yukon	2nd Class City	Yes	583	428	-26.59%
City of Galena	1st Class City	Yes	470	472	0.43%
City of Homer	1st Class City	No	5,003	5,522	10.37%
City of Hoonah	1st Class City	Yes	760	931	22.50%
City of Kotzebue	2nd Class City	No	3,201	3,102	-3.09%
City of Koyukuk	2nd Class City	Yes	96	98	2.08%
City of Kwethluk	2nd Class City	Yes	721	812	12.62%
City of McGrath	2nd Class City	Yes	346	307	-11.27%
City of Nenana	Home Rule City	Yes	378	337	-10.85%
City of Nome	1st Class City	Yes	3,598	3,712	3.17%
City of Seward	Home Rule City	No	2,693	2,717	0.89%
City of Shishmaref	2nd Class City	Yes	563	576	2.31%
City of Togiak	2nd Class City	Yes	817	817	0.00%
City of Valdez	Home Rule City	Yes	3,976	3,985	0.23%
		TOTAL	**627,487**	**648,420**	**3.34%**
		AVERAGE	**20,242**	**20,917**	**3.34%**

1 Census comparisons for 2010 and 2020 came from the Alaska Department of Labor and Workforce Development website on 2020 Census Data For Redistricting at https://live.laborstats.alaska.gov/cen/2020/downloads

2 The Kenai Peninsula Borough population listings for 2010 and 2020 exclude the populations of the Cities of Homer and Seward, which participate in the NFIP on their own and are listed separately in the table above.

3 The Northwest Arctic Borough population listing for 2010 and 2020 excludes the population of the City of Kotzebue, which participates in the NFIP on its own and is listed separately in the table above.

Other Community Characteristics

NFIP participants are located either on Alaska's coast (25%) or on rivers (38%). Some NFIP communities are both coastal and riverine (38%). Compared to all Alaska municipalities, NFIP participants have significantly higher rates of households with adequate plumbing – including both piped water and wastewater utilities. Only two communities are without piped water and wastewater: Koyukuk and Shishmaref. NFIP participants range in total quantity of local housing units from 43 (Koyukuk) to 119,276 (Municipality of Anchorage) housing units.

Table 3: Other Community Characteristics

NFIP Participant	Coastal or Riverine	Unserved Community*	2010 HH w/o Plumbing	Housing Units	Water Treatment System	Water Distribution Facilities	Wastewater Treatment Facilities	Wastewater Collection Facilities
Municipality of Anchorage	Both	No	1	119,276	Yes	Yes	Yes	Yes
City of Aniak	River	No	15	229	Yes	Yes	Yes	Yes
City of Bethel	River	No	10	2,408	Yes	Yes	Yes	Yes
City of Cordova	Both	No	3	1,215	Yes	Yes	Yes	Yes
City of Dillingham	Both	No	7	1,039	Yes	Yes	Yes	Yes
City of Emmonak	River	No	12	211	Yes	Yes	Yes	Yes
Fairbanks North Star	River	No	7	44,059	Yes	Yes	Yes	Yes
City of Fort Yukon	River	No	54	307	Yes	Yes	Yes	Yes
City of Galena	River	No	37	256	Yes	Yes	Yes	Yes
Haines Borough	Both	No	16	1,024	Yes	Yes	Yes	Yes
City of Homer	Coastal	No	4	2,825	Yes	Yes	Yes	Yes
City of Hoonah	Coastal	No	4	385	Yes	Yes	Yes	Yes
City and Borough of Juneau	Both	No	1	13,451	Yes	Yes	Yes	Yes
Kenai Peninsula Borough	Both	No	7	31,439	Yes	Yes	Yes	Yes
Ketchikan Gateway	Both	No	2	6,458	Yes	Yes	Yes	Yes
City of Kotzebue	Coastal	No	7	1,164	Yes	Yes	Yes	Yes
City of Koyukuk	River	Yes	100	43	Yes	No	No	No
City of Kwethluk	River	No	100	208	Yes	Yes	Yes	Yes
Lake and Peninsula	Both	No	14	1,511	Yes	Yes	Yes	Yes
Matanuska-Susitna	River	No	8	30,879	Yes	Yes	Yes	Yes
City of McGrath	River	No	8	218	Yes	Yes		
City of Nenana	River	No	5	219	Yes	Yes	Yes	
City of Nome	Both	No	5	1,559	Yes	Yes	Yes	Yes
Northwest Arctic Borough***	Both	No	22	2,756	Yes	Yes	Yes	Yes
Petersburg Borough	Coastal	No	2	1,712	Yes	Yes	Yes	Yes
City of Seward	Both	No	1	1,123	Yes	Yes	Yes	Yes
City of Shishmaref	Coastal	Yes	96	149	Yes	No	No	No
City and Borough of Sitka	Coastal	No	1	4,175	Yes	Yes	Yes	Yes
Municipality of Skagway	Both	No	6	596	Yes	Yes	Yes	Yes
City of Togiak	Coastal	No	38	255	Yes	Yes	Yes	Yes
City of Valdez	Coastal	No	2	1,446	Yes	Yes	Yes	Yes

*Unserved Communities are communities where 45% or more homes have not been served either via pipes, septic tank & well, or covered haul systems
**Housing unit information for Municipality of Anchorage, Kenai Peninsula Borough, Ketchikan Gateway Borough, Lake and Peninsula Borough, Matanuska-Susitna Borough, Northwest Arctic Borough, Petersburg Borough and City of Seward from Population estimates, July 1, 2019, (V2019) US Census Bureau. All other community information from DCRA's Community Database Online (CDO).
*** Kivalina, a community within the Northwest Arctic Borough, is classified as an Unserved Community
Water and wastewater utility information from DCRA's CDO and from the Alaska Certified Water/Wastewater Operator Database at https://dec.alaska.gov/Applications/Water/OpCert/Home.aspx?p=Home

FEMA Characteristics

Several programs administered and funded by FEMA work in concert with Risk MAP to achieve the goals and objectives of the Risk MAP Program. These programs, and the participation in them by Alaska's NFIP communities, are discussed in the following sections.

Hazard Mitigation Plans

FEMA-funded Hazard Mitigation Plans (HMPs) form the foundation of a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. HMPs are community-driven, living documents that communities use to reduce their vulnerability to hazards. The plan and its process show the link between land-use decisions and vulnerability. The HMP serves as a tool to be used by planners or other officials to advise and inform decision makers.

State, Indian Tribal, and local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance, including Hazard Mitigation Grants.

Hazard Mitigation Plans are significant to the Risk MAP Program because one of the goals of Risk MAP is to lead and support states, local, and tribal communities to effectively engage in risk-based mitigation planning. Risk MAP products can provide crucial information to communities to analyze, incorporate into their HMP updates, and identify actionable strategies that reduce risks. The majority of Alaska's NFIP-participating communities have adopted a local hazard mitigation plan; however four communities have expired HMPs with no apparent update planned. (See Table 4 page 37).

Cooperating Technical Partnerships

As noted earlier, the CTP Program is the means through which FEMA's Risk MAP Program is implemented. While DCRA implements the State of Alaska's Risk MAP Program through a Cooperating Technical Partnership with FEMA, Alaska's local governments have the opportunity to enter into Cooperating Technical Partnerships with FEMA for mapping projects taking place within their jurisdictional boundaries.

Each participating CTP community enters into an agreement with FEMA to do certain mapping projects documented in mutually agreed upon Mapping Activity Statements (MAS). Community partners will receive Community Rating System credits (see next section), which may lead to discounted flood insurance premiums for property owners.

Four NFIP-participating communities have CTP agreements with FEMA including: the Municipality of Anchorage, Fairbanks North Star Borough, City and Borough of Juneau, and the Matanuska- Susitna Borough. (See Table 4, page 37).

Community Rating System

The Community Rating System (CRS) is a voluntary incentive program of the National Flood Insurance Program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: reducing flood losses; facilitating accurate insurance rating; and promoting the awareness of flood insurance. Currently seven NFIP-participating communities take part in the CRS: the Municipality of Anchorage, City of Homer, Kenai Peninsula Borough, Ketchikan Gateway Borough, City of Nome, City of Seward, City of Valdez (See Table 4, below).

Table 4: FEMA Characteristics

NFIP Participant	Hazard Mitigation Plan	HMP Year Approved	HMP Expiration	CTP Agreement	CTP Agree-ment Year	CRS Community
Municipality of Anchorage	Approved	4/10/2017	4/10/2022	Yes	1999	Yes
City of Aniak	Expired	12/8/2015	12/8/2020	No		No
City of Bethel	Approved	5/6/2018	5/6/2023	No		No
City of Cordova	Approved	5/22/2018	5/22/2023	No		No
City of Dillingham	Expired	9/20/2016	9/20/2021	No		No
City of Emmonak	Expired	11/20/2014	11/20/2019	No		No
Fairbanks North Star Borough	Approved	9/12/2021	9/12/2026	Yes	2004	No
City of Fort Yukon	Approved	1/10/2018	1/10/2023	No		No
City of Galena	Expired	9/8/2015	9/8/2020	No		No
Haines Borough	Expired	3/14/2016	3/14/2021	No		No
City of Homer	Start-Up Phase	2019	2024	Yes		Yes
City of Hoonah	Approved	5/14/2018	5/14/2023	No		No
City and Borough of Juneau	Expired	9/11/2012	9/11/2017	Yes	2004	No
Kenai Peninsula Borough	Approved	12/16/2019	12/16/2024	No		Yes
Ketchikan Gateway Borough	Approved	1/11/2017	1/11/2022	No		Yes
City of Kotzebue	Approved	11/18/2019	11/18/2024	No		No
City of Koyukuk	Awaiting Revisions	2021	2026	No		No
City of Kwethluk	Expired	2/23/2010	2/23/2015	No		No
Lake and Peninsula	Expired	11/4/2015	11/4/2020	No		No
Matanuska-Susitna Borough	Approved	2/25/2021	2/25/2026	Yes	N/A	Yes
City of McGrath	Approved	10/14/2018	10/14/2023	No		No
City of Nenana	Pending Adoption	2021	2026	No		No
City of Nome	Approved	2/1/2017	2/1/2022	No		Yes
Northwest Arctic Borough	Approved	1/23/2019	1/23/2024	No		No
Petersburg Borough	Approved	6/13/2018	6/13/2023	No		No
City of Seward	Approved	2/18/2021	2/18/2026	No		Yes
City of Shishmaref	Expired	9/8/2015	9/8/2020	No		No
City and Borough of Sitka	Approved	7/4/2019	7/4/2024	No		No
Municipality of Skagway	Approved	5/11/2020	5/11/2025	No		No
City of Togiak	Pending Adoption	2021	2026	No		No
City of Valdez	Approved	3/11/2019	3/11/2024	No		Yes

Current as of September 27, 2021, as per Weekly Alaska Hazard Mitigation Plan Status report provided by FEMA Region 10.
CRS Status current as per FEMA's Community Rating System Eligible Communities Effective April 1, 2021 at https://www.fema.gov/sites/default/files/documents/fema_april-2021-eligible-crs-communities.pdf

Information on flooding and erosion data in Alaska's communities is limited and oftentimes inaccurate. Floods have been recorded in more than half (56%) of NFIP-participating communities. In the past nineteen years, over two-thirds (68%) of NFIP communities have also experienced a federally declared disaster.

Table 5. Flood and Erosion Characteristics

NFIP Participant	Flood	Most Recent Flood Event	Flood of Record Year	Worst Flood Event Year	Flood Insurance Study	Flood Gauge	AK Baseline Erosion Assessment	2000-21 Fed Declared
Municipality of Anchorage	Yes	1996	1967	N/A	Yes	Yes	Minimal Erosion	3
City of Aniak	Yes	2005	2002	1971	Yes	No	Monitor Conditions	5
City of Bethel	Yes	2009	N/A	1988	Yes	No	Monitor Conditions	5
City of Cordova	Yes	2006	N/A	N/A	Yes	Yes	Priority Action	2
City of Dillingham	Yes	2005	N/A	1929	Yes	Yes	Priority Action	0
City of Emmonak	Yes	2013	1989	1972	Yes	Yes	Priority Action	3
Fairbanks North star	Yes	2008/09	1964	1964	Yes	Yes	Borough, Not rated	2
City of Fort Yukon	Yes	2015	N/A	1949	Yes	Yes	Monitor Conditions	3
City of Galena	Yes	2013	1971	1945	Yes	No	Monitor Conditions	1
Haines Borough	Yes	2020	N/A	1967	Yes	No	Monitor Conditions	1
City of Homer	Yes	2014	1966	N/A	Yes	Yes	Monitor Conditions	2
City of Hoonah	Yes	2005	N/A	N/A	Yes	No	No Erosion Issues	0
City and Borough of Juneau	Yes	2020	N/A	N/A	Yes	Yes	Minimal Erosion	1
Kenai Peninsula Borough	Yes	2018	N/A	N/A	Yes	Yes	Borough, Not rated	5
Ketchikan Gateway Borough	Yes	2020	N/A	N/A	Yes	Yes	Borough, Not rated	1
City of Kotzebue	Yes	2004	N/A	N/A	Yes	Yes	Monitor Conditions	4
City of Koyukuk	Yes	2009	1963	1913	No	No	Monitor Conditions	4
City of Kwethluk	Yes	2020	1971	1963	No	No	Monitor Conditions	0
Lake and Peninsula Borough	Yes	2005	1948	N/A	Yes	Yes	Borough, Not rated	0
Matanuska-Susitna Borough	Yes	2019	N/A	2002	Yes	Yes	Borough, Not rated	4
City of McGrath	Yes	2009	1972	1957	Yes	No	Priority Action	2
City of Nenana	Yes	2008	2008	1967	Yes	Yes	Monitor Conditions	0
City of Nome	Yes	2009	N/A	N/A	Yes	No	Monitor Conditions	1
Northwest Arctic Borough	Yes	2021	N/A	N/A	No	Yes	Borough, Not rated	5
Petersburg Borough	Yes	2020	N/A	N/A	Yes	No	No Erosion Issues	3
City of Seward	Yes	2018	N/A	N/A	Yes	Yes	Monitor Conditions	2
City of Shishmaref	Yes	2020	1973	1973	Yes	No	Priority Action	5
City and Borough of Sitka	Yes	2020	1984	N/A	Yes	Yes	Minimal Erosion	4
Municipality of Skagway	Yes	2020	1943	1943	Yes	Yes	Minimal Erosion	1
City of Togiak	Yes	2015	1964	1964	No	Yes	Minimal Erosion	0
City of Valdez	Yes	2006	N/A	1905	Yes	Yes	Monitor Conditions	2

Most flood data is from U.S. Army Corps of Engineers, Alaska District Floodplain Management Database at: http://corpsmapu.usace.army.mil/cm_apex/cm2.cm2.map?map=POA , the Disaster Cost Index maintained by the Alaska Division of Homeland Security and Emergency Management and current as of

Capacity to Regulate Land Use and to Participate in Land Use Planning

Alaska's Constitution confers broad authority on its local governments. Unlike many states that have centralized planning departments that regulate land use, Alaska State Law requires that planning, platting and land use regulation is carried out by Alaska's incorporated municipalities: home rule, first and second class boroughs, unified municipalities, and first class and home rule cities outside of boroughs. All other classes of municipalities (second class cities) may, but are not required to, exercise these powers. If a second class city is located within the unorganized borough, it has the option but not the duty to exercise planning, platting, and land use regulation within the boundaries of the city. Nine Alaskan cities (Aniak, Bethel, Emmonak, Fort Yukon, Koyukuk, Kwethluk, McGrath, Shishmaref and Togiak) participating in the NFIP fit into this category.

Alaska's local government structure and the authority vested in those local governments is significant to the implementation of the NFIP, because the ability to regulate land use is necessary for participation in the NFIP. The unorganized borough is not a municipal corporation; thus the State of Alaska has no legal authority to mandate planning, platting and land use regulation in second class cities or in unincorporated communities in the unorganized borough. Second class cities in the unorganized borough have the option, not the duty, to address development in the floodplain. Because there is no legal basis for land use regulation in Alaska's unincorporated communities, there is no authority to implement any compliance with the NFIP standards. Consequently, only a portion of Alaska's communities are eligible to participate in the NFIP.

Although NFIP participants must have planning and zoning authority, not all actively regulate land use within their jurisdictional boundaries. Table 6 (next page) shows the level of planning capacity for Alaska's NFIP participant communities.

Emmonak, Fort Yukon, Koyukuk, Shishmaref, and Togiak do not actively regulate land use or participate in land use planning. Nine NFIP-participating communities report not having a planning and zoning commission: Aniak, Emmonak, Fort Yukon, Galena, Koyukuk, Kwethluk, Nenana, Shishmaref, and Togiak. The communities that are not actively engaged in land use planning are also not part of an organized borough; thus there is no regional entity regulating land use.

Fortunately, all NFIP communities are generally engaged in community planning as evidenced by having a community plan adopted; however, type and quantity of community plan widely vary. The majority (59%) of NFIP participants have a paid staff planner. Just over half (54%) also have in-house GIS capacity; however, no NFIP participants report having a paid cartographer.

Table 6: NFIP Community Planning Capacity

NFIP Participant	Planning & Zoning Powers	Planning & Zoning Commission	Zoning Map	Community Plan	# Community Plans	Comprehensive Plan	Land Use Plan	Planner	GIS Tech	Cartographer	GIS Capacity
Municipality of Anchorage	Yes	Yes	Yes	Yes	8	5	1	Yes	Yes	No	Yes
City of Aniak	Yes	No	DK	Yes	3	1		No	No	No	No
City of Bethel	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	Yes
City of Cordova	Yes	Yes	Yes	Yes	5	3		Yes	Yes	No	Yes
City of Dillingham	Yes	Yes	DK	Yes	10	7	2	Yes	Yes	No	No
City of Emmonak	No	No	No	Yes	2			Yes	Yes	No	No
Fairbanks North Star Borough	Yes	Yes	Yes	Yes	8	1	2	Yes	Yes	No	Yes
City of Fort Yukon	No	No	No	Yes	3	2		No	Yes	No	No
City of Galena	Yes	No	Yes	Yes	3	1		No	Yes	No	No
Haines Borough	Yes	Yes	Yes	Yes	4	2		Yes	Yes	No	Yes
City of Homer	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	No
City of Hoonah	Yes	Yes	DK	Yes	4	1	2	Yes	Yes	No	No
City and Borough of Juneau	Yes	Yes	Yes	Yes	13	3	4	Yes	Yes	No	Yes
Kenai Peninsula Borough	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	Yes
Ketchikan Gateway Borough	Yes	Yes	Yes	Yes	5	3		Yes	Yes	No	Yes
City of Kotzebue	Yes	Yes	DK	Yes	4	2		Yes	No	No	No
City of Koyukuk	No	No	No	Yes	2	1		Yes	No	No	No
City of Kwethluk	Yes	No	DK	Yes	3	1		Yes	No	No	No
Lake and Peninsula	Yes	Yes	Yes	Yes	5			Yes	Yes	No	Yes
Matanuska-Susitna	Yes	Yes	Yes	Yes	7	3		Yes	Yes	No	Yes
City of McGrath	Yes	Yes	DK	Yes	1			No	Yes	No	No
City of Nenana	Yes	No	DK	Yes	1	1		No	Yes	No	No
City of Nome	Yes	Yes	Yes	Yes	5	2		Yes	Yes	No	Yes
Northwest Arctic Borough	Yes	Yes	Yes	Yes	4	1		Yes	Yes	No	Yes
Petersburg Borough	Yes	Yes	Yes	Yes	7	2		Yes	Yes	No	Yes
City of Seward	No	No	Yes	Yes	3	2	1	No	Yes	No	Yes
City of Shishmaref	No	No	No	Yes	10			Yes	Yes	No	No
City and Borough of Sitka	Yes	Yes	Yes	Yes	16	3	3	Yes	Yes	No	Yes
Municipality of Skagway	Yes	Yes	Yes	Yes	9	2	4	No	No	No	Yes
City of Togiak	No	No	No	Yes	3			No	No	No	No
City of Valdez	Yes	Yes	Yes	Yes	1	1		Yes	Yes	No	Yes

GIS Capabilities

GIS in-house capacity will enable Alaskan NFIP communities to participate in the new digital mapping program. GIS capacity includes trained staff as well as hardware and software and data that is available within a municipality. Of Alaska's 164 municipalities, only 20 have in-house GIS capacity. Seventeen of these communities participate in the NFIP:

Table 7: GIS Capabilities of NFIP Communities

Community	NFIP	Non-NFIP
City and Borough of Juneau	X	
City and Borough of Sitka	X	
Haines Borough	X	
Kenai Peninsula Borough	X	
Ketchikan Gateway Borough	X	
Kodiak Island Borough		X
Lake and Peninsula	X	
Matanuska-Susitna	X	
Municipality of Anchorage	X	
Municipality of Skagway	X	
North Slope Borough		X
Northwest Arctic Borough	X	
Fairbanks North Star Borough	X	
City of Bethel	X	
City of Cordova	X	
City of Nome	X	
Petersburg Borough	X	
City of Valdez	X	
City of Seward	X	
City of Delta Junction		X

Alaska Flood Hazard Maps

Flooding is responsible for millions of dollars of property damage each year. The State of Alaska averages approximately $2.3 million per year in disaster costs for flood-related emergency costs. Most of the flooding that occurs in Alaska results from rainfall, snowmelt, and ice jams restricting stream channels and backing up flow; tsunamis, earthquakes, and coastal storms also cause flooding. Unique to Alaska, 750 glacier-dammed lakes have been identified causing concern regarding dam failure. If a glacier ice dam fails, lake water is released resulting in downstream flooding called outburst flooding. The rapid melting of snow during volcanic eruptions, tsunamis, and coastal storms can also cause unanticipated flooding (Miller, 2008).

Flood hazard maps produced by FEMA have been one of the primary tools for flood hazard planning for Alaska's city and borough governments, specifically those that participate in the NFIP. Alaska's local governments and the State of Alaska rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood loses. FEMA flood hazard maps currently serve 42 Alaska borough and city governments; however three of these communities are mapped, but have been suspended from the NFIP. These communities have city governments that have failed to adopt ordinances to regulate development in the mapped flood hazard areas. The City of Delta Junction has also been mapped, but made the decision to withdraw from the NFIP in 2015.

Two cities, the City of Koyukuk and the City of Kwethluk, and one borough, the Northwest Arctic Borough, are in the "Emergency Phase" of the NFIP and have no FEMA Flood Insurance Rate Maps (FIRM) or Flood Hazard Boundary Maps (FHBM). Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 109 incorporated city and borough governments that have no FEMA flood hazard maps. Furthermore, no ordinances exist to regulate floodplain development. These cities and boroughs do not have the availability of federal flood insurance and federally-backed financial assistance may be withheld, stymieing economic development opportunities. Many of these same communities are flood-prone resulting in costly state and federal disasters without the benefit of federal flood insurance. FIRMs are available through FEMA and are on the Web at the FEMA Map Service Center at: https://msc.fema.gov/portal

FIRMs are useful in a variety of ways to many persons and agencies. Private citizens and insurance brokers use the FIRM to locate properties and buildings in flood insurance risk areas. Community officials use the FIRM to administer floodplain management regulations and to mitigate flood damage. Lending institutions and federal agencies use the FIRM to locate properties and buildings in relation to mapped flood hazards, and to determine whether flood insurance is required when making loans or providing grants following a disaster for the purchase or construction of a building. FIRMS should be updated continuously but this costs time and money that often is hard to find. Some of Alaska's FIRMs are between 30 and 44 years old. The average age of Alaska's firms is 16 years; nearly one-third of the maps are over 20 years old. FEMA, the State of Alaska, and NFIP communities are working to update maps as resources allow. Since 2011, 19 Alaskan cities and boroughs have been engaged in new Risk MAP studies; 10 of these have resulted in new FIRMs. These studies are discussed in more detail in the next section, ***Current Alaska Risk MAP Studies***,

beginning on page 45.

DCRA, as the designated State-Coordinating Agency for the NFIP, has historically assumed responsibility for the floodplain mapping program as well as producing community profile maps for smaller communities that include best available flood and erosion information. Since 2009, DCRA has also assumed responsibility for providing digital flood hazard maps to FEMA for new communities entering the NFIP. The work has largely been completed via community profile map contractors.

As illustrated by Table 8 on page 44, three NFIP-participating communities do not have a FIRM: the Cities of Koyukuk and Kwethluk, and the Northwest Arctic Borough (with the exception of the City of Kotzebue, which participates in the National Flood Insurance Program on its own). Of those NFIP participants with FIRMS, the number of panels range from 1 (Skagway, McGrath, and Nenana) to 184 (Matanuska-Susitna Borough). The number of maps with Letters of Map Change (LOMC) range from zero to 309 (Fairbanks North Star Borough). Firm map age ranges from less than one year to 42 years old (Skagway).

Letters of Map Change (LOMC)

A LOMC is a letter which reflects an official revision to an effective FIRM. LOMCs are issued in place of the physical revision and republication of the effective map. The number of LOMCs submitted can indicate that a FIRM may need revision. The third column of Table 8 on the following page shows the number of effective FIRM panels with LOMCs submitted by NFIP-participating community.

Figure 19: January 2015 Flooding on Ketchikan Creek, Creek Street, Ketchikan, Alaska

Table 8: Flood Insurance Rate Maps (FIRMS)

Community Name	FIRM	EFFECTIVE MAPS			HISTORICAL MAPS			Preliminary Panels	Most Recent Effective FIRM Age (Years)
		FIRM Panels	LOMCs	FIRM Effective Date	FIRM Panels	LOMCs	Initial FIRM Date		
Municipality of Anchorage	Yes	94	104	9/25/2009	54	74	9/5/1979		12
City of Aniak	Yes	9	0	9/29/2006	4	0	9/5/1978		15
City of Bethel	Yes	8	1	9/25/2009	7	3	6/28/1974		12
City of Cordova	Yes	12	3	12/16/2015	2	4	5/24/1977	57	5
City of Dillingham	Yes	5	1	9/30/1982	1	0	5/31/1974		38
City of Emmonak	Yes	4	0	9/25/2009	1	0	9/21/1998		11
Fairbanks North Star Borough	Yes	94	221	3/17/2014	54	369	6/25/1969	8	6
City of Fort Yukon	Yes	8	0	2/3/2010					10
City of Galena	Yes	6	0	3/1/1984	2	0	10/12/1982		36
Haines Borough	Yes	2	0	5/1/1987	1	0	5/31/1974		33
City of Homer	Yes	13	1	10/20/2016	19	4	5/19/1981		4
City of Hoonah	Yes	3	0	6/4/2010	2	0	1/14/1977		10
City and Borough of Juneau	Yes	65	123	3/17/2014	21	42	5/9/1970	24	6
Kenai Peninsula Borough	Yes	105	23	10/20/2016	31	8	9/27/2013		4
Ketchikan Gateway Borough	Yes	3	10	4/16/1990	3	0	5/9/1978	20	30
City of Kotzebue	Yes	3	0	7/18/1983	1	0	1/23/1976		37
City of Koyukuk	No	-		--			-	-	-
City of Kwethluk	No	-		-			-	-	-
Lake and Peninsula Borough	Yes	5	0	2/3/2010					10
Matanuska-Susitna Borough	Yes	203	19	9/27/2019	204	278	2/28/1978	127	1
City of McGrath	Yes	2	0	10/4/2011	1	0	1/9/1976		9
City of Nenana	Yes	1	2	4/7/1999	1	0	6/9/1972		21
City of Nome	Yes	8	0	5/3/2010	4	0	6/28/1974		10
Northwest Arctic Borough	No	-		-			-	-	-
Petersburg Borough	Yes	6	12	6/1/1982	1	0	6/14/1974		38
City of Seward	Yes	23	0	10/20/2016	11	0	9/27/2013		4
City of Shishmaref	Yes	4	0	5/3/2010	1	0	8/23/2001		10
City and Borough of Sitka	Yes	45	1	8/1/2019	32	17	6/1/1982		1
Municipality of Skagway	Yes	1	0	3/1/1977					43
City of Togiak	Yes	6	0	2/3/2010			2/3/2010		10
City of Valdez	Yes	50	1	1/3/2019	64	4	11/1/1974		1

Information retrieved from FEMA's Map Service Center on September 29, 2021

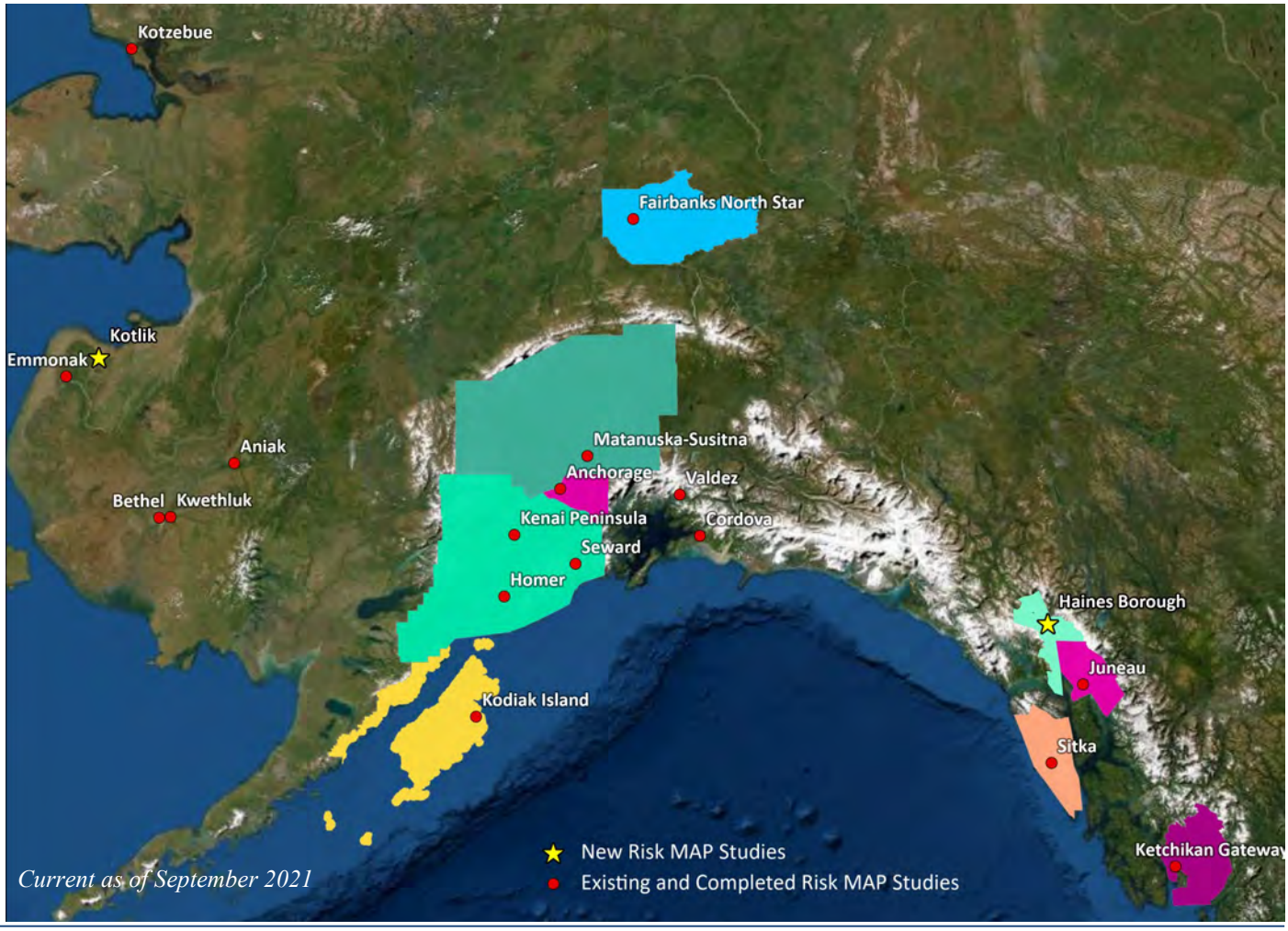
Current Alaska Risk MAP Studies

As of September 2021, 19 local governments have been recipients of Risk MAP studies which have just begun, are underway or completed. Four of these local governments were also involved with studies begun under the Map Modernization Program. The studies range from risk and vulnerability assessments to LiDAR acquisition to physical map revisions.

Over the past few years, the State of Alaska, FEMA, and FEMA's mapping contractor conducted Risk MAP meetings with the Municipality of Anchorage, Fairbank North Star Borough, City and Borough of Juneau, Kenai Peninsula Borough, Ketchikan Gateway Borough, Kodiak Island Borough, Matanuska-Susitna Borough, City and Borough of Sitka, and the Cities of Aniak, Bethel, Cordova, Emmonak, Kotzebue, Kwethluk, and Valdez.

Summaries of current and completed Risk MAP studies in Alaska begin on the next page. The map below shows the jurisdictions in which new, existing and completed Risk MAP studies are located. The State Risk MAP Coordinator and FEMA Region 10 have engaged Kotlik and Haines Borough (identified by a star) in Pre-Discovery conversations.

Figure 20: Alaska Risk MAP Studies - New, Existing and Completed



This page intentionally left blank

Municipality of Anchorage

FEMA and the State of Alaska have been involved with a Risk MAP Study in the Municipality of Anchorage (MOA) that began in 2013.

Study Scope

The Municipality of Anchorage Risk MAP Study included a series of non-regulatory risk and exposure assessments. The results and findings of these risk and exposure assessments have been summarized in a draft Risk Report which has been made available for the Municipality of Anchorage's review.

Earthquake Risk Assessment

Maps depicting the shaking intensity and ground motion produced by an earthquake, called ShakeMaps, can be produced in near-real time for events or created for specific scenarios by regional seismic network operators in cooperation with the U.S. Geological Survey (USGS). ShakeMaps can be used for response, land use, and emergency planning purposes. The ShakeMaps selected by FEMA, the Municipality of Anchorage, and the Alaska Division of Geological and Geophysical Surveys (DGGS) for this analysis represented the best available data at the time:

- M7.5 Castle Mountain Scenario
- M7.2 lntraplate Scenario
- M7.1 Border Ranges Fault

FEMA's contractor incorporated individual parcel data from the Municipality of Anchorage into Hazus to allow losses to be reported at the parcel level. The team incorporated only properties with buildings (improvements) into the analysis; therefore, the team did not assess impacts to vacant land.

As noted, the ShakeMaps listed above were the best available data to run the earthquake risk assessment. Since the 2018 Cook Inlet earthquake took place, more recent ShakeMaps are available and could be used to update the earthquake risk assessment.

Flood Exposure Assessment

In 2009, FEMA created a digital Flood Insurance Rate Map for the Municipality of Anchorage using existing U.S. Army Corps of Engineers work maps to regulate and manage flood hazards in Anchorage, Chugiak, Eagle River, Girdwood, Indian, and other regions within the Municipality of Anchorage. Special Flood Hazard Areas (SFHAs) based on existing modeling were mapped for Anchorage, Chugiak, Eagle River, and Girdwood. Portions of the Municipality of Anchorage are mapped as Zone D, areas where there are possible but undetermined flood hazards, as no assessment of flood hazards has been conducted. These maps were used for the flood exposure assessment. Due to the age and the type of data used, an updated flood study with high quality LiDAR data could produce a more accurate flood risk assessment for the Municipality of Anchorage.

Avalanche Exposure Assessment

The avalanche exposure assessment was based on the 1982 ***Anchorage Snow Avalanche Zoning Analysis*** prepared by Arthur Mears. Due to the age of this information, more current data could be collected to

refresh this exposure assessment.

Dam Failure Exposure Assessment

The dam failure exposure assessment performed by FEMA's contractor measured potential impacts of dam inundation based on the failure of dams. Dam flooding was estimated based on the inundation by floodwater of a specified area being protected by a dam or levee. Dam inundation areas varied based on the type of structure, location of structural elements, and flooding source being addressed.

Landslide Vulnerability Assessment

To estimate where landslide hazard occurrences could potentially affect properties within the Municipality of Anchorage, the project team performed a spatial analysis to identify vulnerable structures with an estimated potential loss based on exposure. For this exposure assessment, the team compared the locations of improved parcels to the geographic extent of deep transitional landslides (Jibson and Michael, 2009). Spatial data for shallow landslide zones is not available.

Wind Exposure Assessment

Wind risk data was obtained from the Municipality of Anchorage. For this exposure assessment, the FEMA's contractor compared locations of improved parcels to the geographic extent of high wind.

Wildfire Vulnerability Assessment

The wildfire exposure assessment was based on historic wildfire incidents gathered from USGS, BLM, DGGS and FEMA.

Flood Study Priorities

Flood study needs and priorities for the flood sources impacting MOA will be documented in the Risk Report that FEMA can use as funding becomes available for additional riverine flood insurance studies. The report will address the following topics:

1. Vertical Datum – document the steps needed for MOA to transition to the use of NAVD88 and any outside assistance needed to make the transition.
2. LiDAR – document existing LiDAR and other topographic data, including details on data quality, and determine areas where future LiDAR acquisition is desired.
3. Re-delineation – document issues with previous re-delineations of Special Flood hazard Areas.
4. New Flood Studies – document flooding sources in MOA and prioritize areas for new flood insurance studies.
5. Levee Policy – document levees in MOA and the impact on flood studies based on FEMA's Levee Policy.

Outstanding/Pending Flood Studies

In addition to the new Risk MAP study discussed above, there are two outstanding/pending flood studies in the MOA:

- A Physical Map Revision incorporating new studies for Furrow and Girdwood Creeks in 2006. This project is a legacy Map Mod project which is currently on hold due to the change in FEMA's levee policy.
- Under the Risk MAP Program, FEMA commenced a Physical Map Revision/LiDAR Acquisition project comprised of a mix of detailed studies and redelineations, including a detailed study of Eagle River and re-delineation of Girdwood flooding sources and of Little Campbell Creek. This project has been suspended due to numerous concerns the Municipality had with technical and procedural aspects of *the project, including the vertical datum and the scope of the project study. FEMA would like to continue the project once these concerns are addressed and resolved.*

Figure 21: Damage following 2013 Anchorage wind storm

This page intentionally left blank

City of Aniak

The Risk MAP process began for the City of Aniak on October 30, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Aniak officials were asked to identify persistent flood problems and other hazard areas of concern, which will discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Aniak on July 27, 2016 to conduct a Risk MAP Discovery Meeting with City of Aniak leadership and staff. We discussed the purpose of the Risk MAP Program and how it could benefit the City of Aniak. Aniak's Local Hazard Mitigation Plan (LHMP) was completed in 2015, so the next update will be in 2020. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. City staff identified flood, fire and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

Figure 22: Flooding in the Village of Aniak

This page intentionally left blank

City of Bethel

The Risk MAP process began for the City of Bethel on May 27, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Bethel officials identified persistent flood problems and other hazard areas of concern, which will discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Bethel on June 15, 2016 to conduct a Risk MAP Discovery Meeting with City of Bethel staff and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Bethel. Bethel's Local Hazard Mitigation Plan (LHMP) was completed in 2008, so the plan has expired. The City is considering an update to the plan in the near future. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire, permafrost and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

Figure 23: Bethel, Alaska, July 2016

This page intentionally left blank

City of Cordova

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City of Cordova that began in 2011 and was completed in the winter of 2016.

Study Scope

The scope of work of the City of Cordova Risk MAP Study includes (see also the map on page 53)

- The mapping of approximately 9.7 miles of shoreline utilizing the new storm surge modeling (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. Updated areas include approximately 4.5 miles of Eyak Lake, 1 mile of Eyak River using detailed study analysis, 1.2 miles of Ibek River using approximate study analysis, and 1.0 miles of Shaded Zone X on Fleming Creek, Creek No. 1, and Creek No. 2 using approximate study analysis.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's were released on August 25, 2014.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.
- Utilizing existing tsunami inundation maps, and evacuation maps, tsunami-focused public outreach materials were developed for the City of Cordova, to be utilized during the July 15th Copper River Salmon Festival in Cordova, including the following tasks:
  - Develop a document that incorporates existing tsunami inundation maps for Cordova with existing tsunami evacuation routes in a format repeatable by the AK DHS&EM for use in other tsunami prone communities
  - Develop tsunami outreach and preparedness messaging and add to the evacuation/inundation maps that can be utilized throughout the State of Alaska in future tsunami outreach materials
  - Provide a template for future tsunami inundation and evacuation mapping with messaging for future Alaska mapping efforts
  - Printed tsunami inundation and tsunami evacuation maps and messaging will be provided by the Alaska Division of Homeland Security and Emergency Management
  - Assistance with planning and implementation of a tsunami outreach event in coordination with

the Copper River Salmon Festival to be held July 15th, 2017

- Alaska's Division of Homeland Security and Emergency Management will provide the Quake simulator for use during the Copper River Salmon Festival on July 15th, 2017

Cordova Project Status

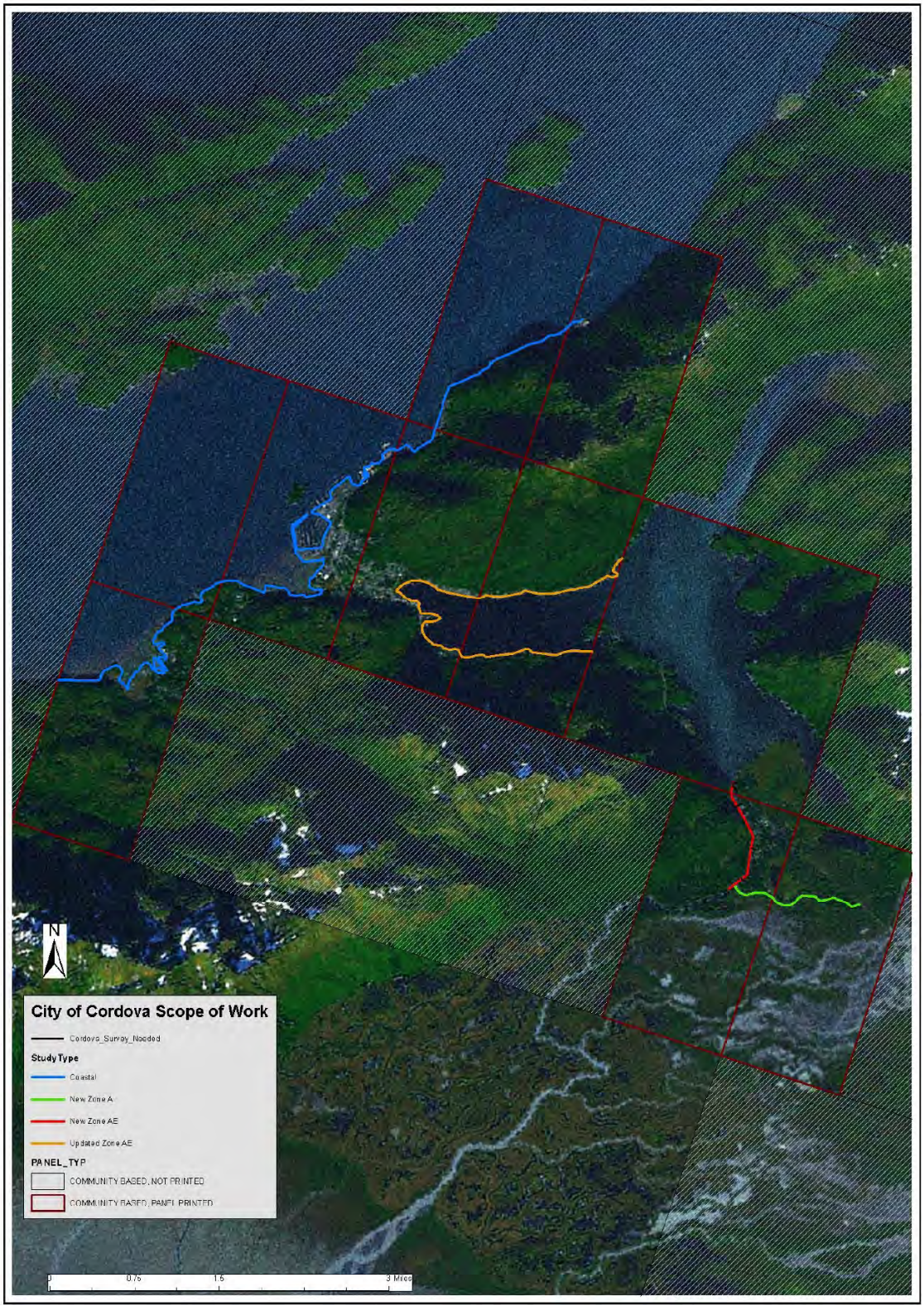
The flood study has concluded and the FIRMs and FIS became effective on December 16, 2015. Once all risk assessments are completed, FEMA will compile them into a multi-hazard Risk MAP Risk Report, which will include a risk assessment of flood, earthquake, and tsunami hazards.

A Resilience Workshop Webinar was held with the City of Cordova on February 22, 2016 to discuss the results and risk reduction strategies. A follow-up meeting was held March 18, 2016. The table below illustrates project status and includes major milestones with dates.

Table 9: Cordova Project Status

Activity	Actual or Projected End Date
Cordova Discovery Interview	February 11, 2011
Cordova Discovery Meeting	March 4, 2011
Base Map Acquisition	Spring 2011
Discovery Report	May 2011
Perform Field Survey/Develop Topographic Data	Summer 2013
Perform Coastal Analysis/Hydraulic Analysis	January 2014
Perform Floodplain Mapping/Develop DFIRM Database	Spring 2014
Draft Work Maps Issued	March 14, 2014
Flood Risk Review Meeting	June 25, 2012
Preliminary DFIRM/FIS Released	August 25, 2014
Consultation Coordination Officers (CCO) Meeting	September 23, 2014
Public Meeting/Workshop	September 23, 2014
Revised Preliminary DFIRM/FIS Release	October 31, 2014
90-Day Appeal Period Start Date	January 2, 2015
90-Day Appeal Period End Date	April 4, 2015
Letter of Final Determination Issued	June 16, 2015
DFIRM/FIS Effective Date	December 16, 2015
Draft Multi-Hazard Risk Report	Winter 2016
Risk MAP Resilience Webinar	February 22, 2016
Flood Risk Datasets (CSLF, depth grids)	February 23, 2016
Delivery of Final Risk report and Risk Assessment Database	Winter 2016

Figure 24: Map of Cordova Project Scope



This page intentionally left blank

City of Emmonak

The Risk MAP process began for the City of Emmonak on May 28, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Emmonak officials identified persistent flood problems and other hazard areas of concern, which will discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Emmonak on June 16, 2015 to conduct a Risk MAP Discovery Meeting with City of Emmonak leadership and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Emmonak. Emmonak's Local Hazard Mitigation Plan (LHMP) was completed in October 7, 2014, so the plan will expire soon. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire and erosion hazards on a map. This information was developed into a Discovery map, which accompanied a Discovery report, presented to the community on September 9, 2015.

Channel Migration Project

As part of Emmonak's Risk MAP study, FEMA funded the Alaska Division of Geological and Geophysical Surveys to conduct a channel migration study at Emmonak. The Channel Migration Study of Emmonak, Alaska was completed in November 2018 and is available online at http://dggs.alaska.gov/webpubs/dggs/ri/text/ri2018_001.pdf.

On a regional scale, the study found that major flood events, particularly from ice jams, have the potential to migrate channels and reroute Yukon River discharge across the floodplain. Changes to river morphology could result in less water flowing through Kwiguk Pass, which could impact local commercial and subsistence fishing activities as well as barge access to the community. DGGS recommended that additional studies be conducted to better understand the potential for channel migration near Emmonak. Additionally, minimal information is available on historical floods in the region. Historical information that would benefit future studies includes:

- The type of flood event that occurred, the location of ice jams (if appropriate), and flood extent beyond the community location.
- Future flood events should be documented by mapping flood extents and monitoring river water levels on Kwiguk Pass.
- Studies to numerically model river dynamics would benefit from additional elevation and bathymetric data of the study area.

On a local scale, the study found that erosion of the Yukon River and Kwiguk Pass have the potential to significantly impact community infrastructure. Based on historical orthoimagery and lidar, rates of shoreline change on Kwiguk Pass are generally on the order of +/- 1 m/year (3.3 ft/year). Certain areas experience higher rates of erosion, including the river shoreline east of the city dock (average 2.03 m/year [6.7 ft/ year]):

- Road infrastructure along the river to the east of the city dock is expected to experience significant impacts from erosion by 2020.
- Erosion of infrastructure can be mitigated through constructing a hardened river bank, moving, or rebuilding infrastructure. Although hardened structures provide immediate protection from erosion events, they have limited lifetimes and can redirect river energy to cause erosion downstream.
- The study recommended continued monitoring and reanalysis of erosion rates will improve the understanding of whether or not erosion rates are increasing or decreasing through time and whether erosion is episodic or continuous.

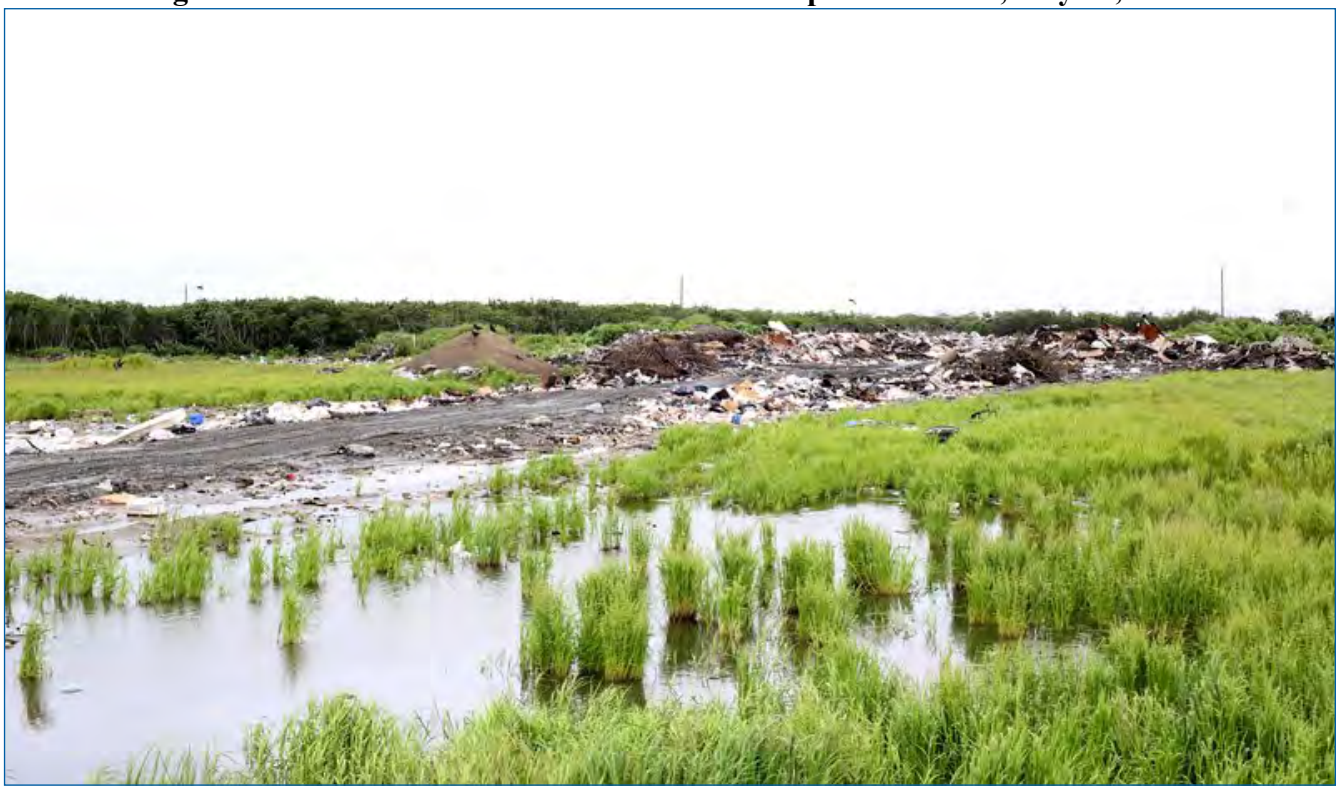
The table below illustrates project status and includes major milestones with dates.

Table 10: City of Emmonak Project Status

Activity	Actual or Projected End Date
Discovery Meeting	June 16, 2015
Discovery Report distributed	September 2015
LiDAR collected	August 30, 2016 - June 30, 2017
Channel Migration Assessment	November 2018

**All projected dates are subject to revision as the project progresses*

Figure 25: Debris from flood on Emmonak dump service road, July 15, 2013



Fairbanks North Star Borough

Base Flood Engineering Study

This effort was initiated in September 2020. FEMA's contractor obtained 2017/2018 LiDAR/DTM datasets from the Alaska DGGS Elevation portal. Hydrology using Regression/Gage along with Rainfall Runoff was finalized in March 2021. Fairbanks North Star Borough requested approximately 215 miles of additional Base Level Engineering (BLE) stream reaches in January 2021. This additional footprint will be considered during the next phase of the project, which began in September 2021.

Recent Activity

Hydraulics for Phase 1 of the BLE project was completed in mid-July 2021. The BLE Mapping is available for viewing at the following link: FEMA GeoPlatform (Base Level Study Draft Map Viewer): Fairbanks North Star Borough, Alaska - Estimated (2021.07.06) - Viewer - Overview (arcgis.com)
A kickoff call was held scheduled to go over the BLE results of Phase 1 and to introduce Phase 2 of BLE production, which will include development of Regulatory and Non-Regulatory products.

Additional information is available at the following links:

FEMA GeoPlatform (Flood Study Lifecycle):
Fairbanks North Star Borough, Alaska - Flood Study Lifecycle - Overview (arcgis.com)

Project Deliverables (Risk MAP Contacts and Project Area Scope Map)*:
https://www.starr-team.com/starr/RegionalWorkspaces/RegionX/FNSB_AK_DFIRM-PTS_Support_to_CTP/SitePages/Home.aspx

Project Milestones and Deliverables are summarized on the table on the next page:

Table 11: Fairbanks North Star Borough Base Level Engineering Project Status

Activity	Actual or Projected End Date
Flood Study Kick-Off Meeting	August 27, 2020
BLE Map Release (GeoPlatform)	July 21, 2021
Flood Study Kick-Off Meeting	August/September 2021*
Draft Map Release	October 2022*
Flood Risk Review (FRR) Meeting	November 2022*
Preliminary DFIRM/FIS Release	April 2023*
Consultation Coordination Officers (CCO) Meeting	May 2023*
Public Meeting/Workshop	June 2023*
Appeal Period Starts	TBD
Appeal Period Ends	TBD
Letter of Final Determination	TBD
Draft Multi-Hazard Risk Report	TBD
Risk MAP Resilience Workshop	TBD
Delivery of Final Risk Report and Risk Assessment Database	TBD
Maps and FIS become Effective	TBD

**All projected dates are subject to revision as the project progresses*

2016-2018 Chena Slough Flood Study

In 2014, when the Fairbanks North Star Borough's effective Flood Insurance Study (discussed above) was being completed, the Borough identified an updated flood study for Chena Slough as a local mapping need. FEMA was unable to include an updated flood study for Chena Slough at that time. Since then, the Borough hired a mapping contractor with Cooperating Technical Partnership (CTP) funding and has completed an updated flood study for Chena Slough through the Cooperating Technical Partners. FEMA's mapping contractor performed Quality Assurance/Quality Control (QA/QC) of this flood study, and incorporated the updated study data into Preliminary Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) for public release and review.

Following release of the Preliminary Flood Insurance Rate Maps for Chena Slough on February 15, 2019, a Consultation Coordination Officer's Meeting was held in Fairbanks on April 23, 2019. At this meeting, FEMA provided an overview of what was updated on the maps, the regulatory process (appeal period, Letter of Final Determination, etc.), and how the Fairbanks North Star Borough would like to do the

outreach to the public about the new maps. A Public Open House meeting was held on June 20, 2019 in North Pole, Alaska. The scope of this meeting was to educate the residents of the Borough on the preliminary map changes. Information regarding the regulatory and insurance implications of the new floodplain delineation will be provided to the meeting attendees. Subject matter experts were on hand to answer any questions from the community members.

After completion of the final mapping products, a Letter of Final Base Flood Elelvation Determinations (LFD) was issued on March 18, 2020. An LFD is a letter FEMA sends to the Chief Executive Officer of a community stating that a new or updated FIRM or DFIRM will become effective in six months.

The FIRMs and FIS became effective on September 18, 2020. Effective maps are available for download on FEMA's Flood Map Service Center website (https://msc.fema.gov/portal/advanceSearch). Community officials also received in the mail the Revalidation Letter that lists previously issued Letters of Map Change (LOMCs) that have been reaffirmed for the new FIRM. The Revalidation Letter became effective one day after the publication of a community's new or revised final FIRM. The Revalidation Letter does not list LOMCs that have been incorporated into the revised panel, LOMCs that are superseded by new or revised mapping, or LOMCs that are no longer valid. While the Summary of Map Actions (SOMA) is a preliminary assessment of which LOMCs may still be valid after the new maps are issued, the Revalidation Letter is the final, effective determination of the LOMCs which remain valid. The SOMA and the Revalidation Letter are meant to assist community officials in the maintenance of the community's FIRM.

The table below summarizes project status and includes major milestones with dates:

Table 12: Fairbanks North Star Borough Chena Slough Project Status

Activity	Actual or Projected End Date
Flood Study Kick-Off Meeting	November 23, 2016
Preliminary DFIRM/FIS Release	February 15, 2019
Consultation Coordination Officers (CCO) Meeting	April 23, 2019
Public Meeting/Workshop	June 20, 2019
90-Day Appeal Period Starts	September 6, 2019
90-Day Appeal Period Ends	December 5, 2019
Letter of Final Determination (LFD)	March 18, 2020
Maps and FIS became Effective	September 18, 2020

**All projected dates are subject to revision as the project progresses*

2006-2014 Legacy Map Modernization Study

In 2014, FEMA completed a legacy Map Modernization study begun in 2006 to re-study some of the map panels in the Fairbanks North Star Borough FIRM.

The scope of the project included detailed study of the Chena River from its mouth to Moose Creek Dam, Noyes Slough, and the Little Chena River from its confluence with Chena River to 10,800 feet upstream of Chena Hot Springs Road. This study also includes the flood-prone areas along the Tanana River and the Chena Slough that are unchanged from the August 1982 edition of the Flood Insurance Rate Map. Earlier studies on the Chena and Little Chena rivers were approximations of flood potentials derived from aerial photography during actual flooding events. This study was an integral part of a U.S. Army Corps of Engineers Environmental Assessment on the Chena River Lakes Flood Control Project which concluded that the congressionally authorized maximum flow release in downtown Fairbanks of 12,000 cubic feet per second (cfs) should not be changed. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The revised flood hazard determinations and FIRM map panels became effective on March 17, 2014,

City of Homer

In Early February 2011, FEMA initiated a Coastal Physical Map Revision study to update the DFIRM for the Homer Spit. This project included 8 miles of revised coastal hazard analysis that included collection of storm surge data (coastal hydrology) and the analysis of overland wave height (coastal hydraulics), in addition to computing wave run-up. The new Flood Insurance Rate Maps (FIRMs) became effective November 6, 2013.

The Homer coastal area was also part of Coastal Physical Map Revision of the Kenai Peninsula Borough

Coastal Study Scope

Specific to the City of Homer, the scope of work of the Kenai Peninsula Borough Risk MAP Study included:

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics) near Beluga Lake and Beluga Slough
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.

Status of Homer Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held March 2, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the City of Homer. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance Rate Maps became effective on October 20, 2016.
FEMA developed a multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk

MAP study. Risk assessments have been completed for tsunami, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report. The State Risk MAP Coordinator sent the Risk Report out for review on October 6, 2016 and requested comments back by October 28, 2016.

On August 14, 2017, FEMA and the State held a webinar to review the data and results of the Risk Report.

Following this, the State and FEMA conducted a Resilience Workshop in the City of Homer on August 24, 2017. During the Resilience Workshop, community resilience needs, priorities and priority actions were identified. State and federal partners will address the priority actions and apprize local residents of accomplishments.

The table below illustrates project status and includes major milestones with dates:

Table 13: Homer Project Status

Activity	Actual or Projected End Date
Homer Discovery Interview	January 25, 2011
Homer Discovery Meeting	March 2, 2011
Discovery Report	May 2011
Flood Study Kick-Off Meeting	July 23-26, 2012
Draft Maps Released/ Flood Risk Review Meeting	August 27-28, 2013
Preliminary DFIRM/FIS Release	June 13, 2014
Consultation Coordination Officers (CCO) Meeting	September 9-11, 2014
Public Meeting/Workshop	September 9-11, 2014
90-day Appeal Period Start Date	1st: January 28, 2015; 2nd: August 12, 2015
90-day Appeal Period End Date	1st: April 28, 2015; 2nd: November 10, 2015
Letter of Final Determination Issued	April 20, 2016
Draft Multi-Hazard Risk Report	October 6, 2016
Maps and FIS Become Effective	October 20, 2016
Risk MAP Resilience Workshop	August 22-24, 2017
Delivery of Final Risk Report and Risk Assessment Database	January 2018

City and Borough of Juneau

In 2013, a legacy Map Modernization study was completed to develop DFIRMs for coastal and riverine areas within the City and Borough of Juneau (CBJ). These maps became effective August 19, 2013.

FEMA and the State of Alaska are currently conducting a Risk MAP Study in the CBJ that began in late 2013.

Project Scope

The table below outlines the engineering work scoped for the City and Borough of Juneau.

Table 14: Juneau Project Scope

Stream Name	Riverine or Coastal	Modeling Type (ZONE)	Stream Length
Duck Creek	Riverine	Detailed (Zone AE)	3 miles
Lemon Creek	Riverine	Detailed (Zone AE)	2 miles
Jordan Creek	Riverine	Detailed (Zone AE)	3 miles
Unnamed Tributary to Duck Creek	Riverine	Detailed (Zone AE)	0.25 miles
East Fork Duck Creek	Riverine	Detailed (Zone AE)	1 mile
Gold Creek	Riverine	Approximate with structures (Zone A)	2 miles
Auke Lake	Riverine	Approximate with structures (Zone A)	1 mile
Auke Bay	Coastal	Detailed Redelineation (Zone VE)	15 miles
Douglas Harbor	Coastal	Detailed Redelineation (Zone VE)	4 miles
Tee Harbor	Coastal	New Coastal Study (Zone V or VE)	3 miles

The map on page 69 illustrates the project scope locations.

Status of City and Borough of Juneau Project

As a result of comments received by FEMA during the first 90-day appeal period, Revised Preliminary Flood Insurance Rate Maps (FIRMs) were developed and released on November 30, 2018. The proposed flood hazard determination notice for CBJ was published in the Federal Register in June 2019. FEMA provided a second 90-day appeal period for the Revised Preliminary FIRMs, beginning with the second newspaper publication on July 24, 2019.

During and immediately after the end of the 90-day appeal period for the revised preliminary products, FEMA will work with CBJ to resolve any comments/appeals the community may have, and acknowledgement and resolution letters will be provided. A second Public Open House meeting will be held on August 28, 2019 to educate CBJ residents of the revised preliminary map changes.

Recent Activity

The final mapping products have been finalized and Quality Reviews are complete. The Letter of Final

BFE Determinations (LFD) was issued on March 18, 2020. An LFD is a letter FEMA sends to the Chief Executive Officer of a community stating that a new or updated FIRM or DFIRM will become effective in six months. A draft Multi-Hazard Risk Report was developed for the Juneau area as part of the ongoing Risk MAP study. The Risk Report includes a risk assessment of avalanche, earthquake, flooding, landslide, tsunami, volcano ash fall, and wildfire. Hazus, FEMA's loss estimation software, was used to assess earthquake and flood hazards. A Resilience Workshop, the date yet to be determined, will be held to discuss the results and risk reduction strategies.

The FIRMs and FIS became effective on September 18, 2020. Effective maps are available for download on FEMA's Flood Map Service Center website (https://msc.fema.gov/portal/advanceSearch). Community officials received in the mail the Revalidation Letter that lists previously issued Letters of Map Change (LOMCs) that have been reaffirmed for the new FIRM. The Revalidation Letter became effective one day after the publication of a community's new or revised final FIRM.

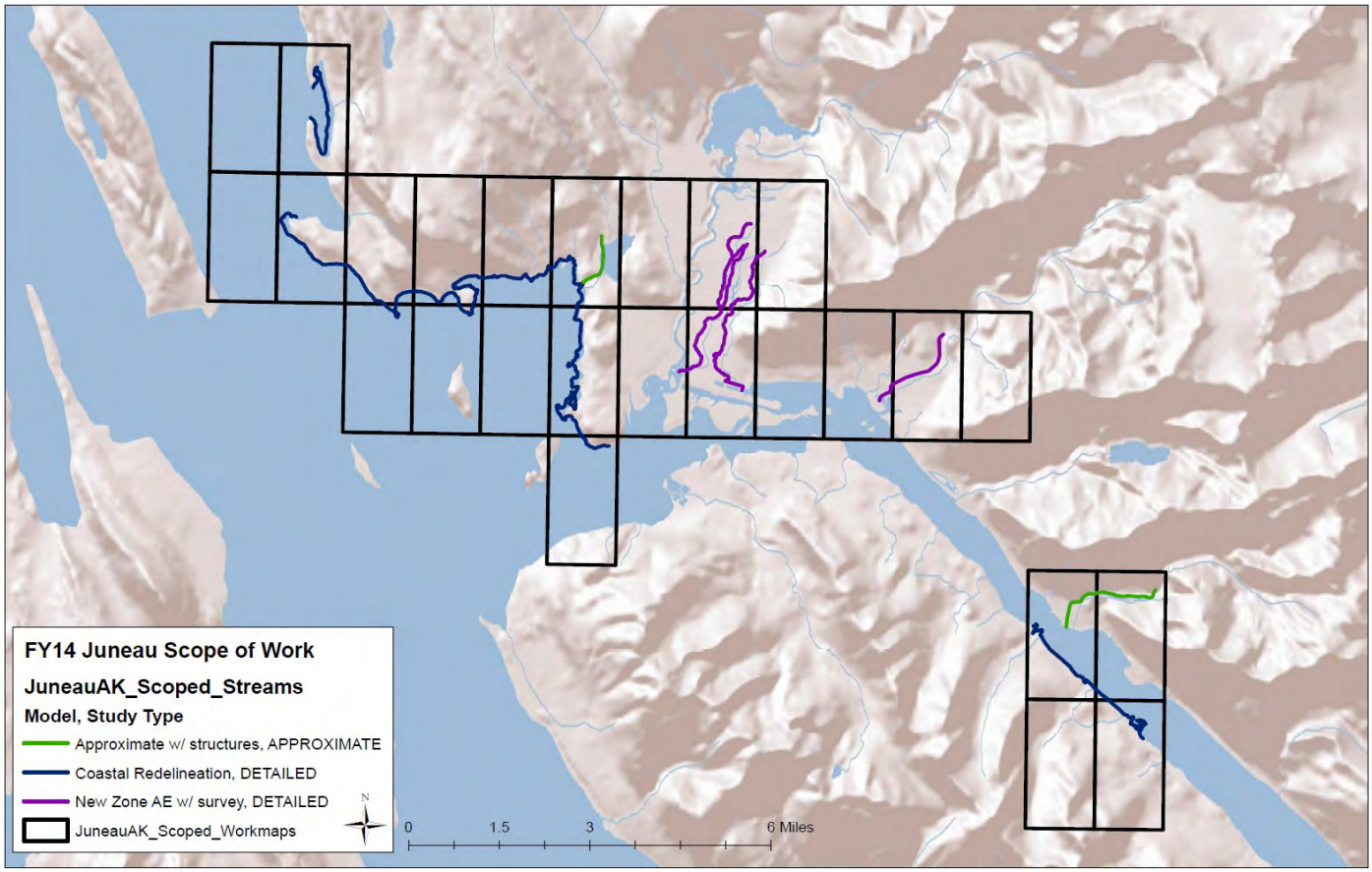
The table below illustrates project status and includes major milestones with dates:

Table 15: Juneau Project Status

Activity	Actual or Projected End Date
City and Borough of Juneau Discovery Interview	January 26-28, 2011
City and Borough of Juneau Discovery Meeting	September 26, 2013
Flood Study Kick-Off Call	August 17, 2016
Draft Workmap Release	May 18, 2016
Flood Risk Review Meeting	August 30, 2016
Preliminary DFIRM/FIS Release	August 25, 2017
Consultation Coordination Officers (CCO) Meeting	January 9, 2018
Public Meeting/Workshop	April 4, 2018
1st Appeal Period Starts	April 11, 2018
1st Appeal Period Ends	July 9, 2018
Revised Preliminary DFIRM/FIS Release	November 30, 2018
Draft Multi-Hazard Risk Report	January 14, 2019
2nd Appeal Period Starts	July 24, 2019
2nd Appeal Period Ends	October 22, 2019
Risk MAP Resilience Workshop	To Be Determined*
Delivery of Final Risk Report and Risk Assessment Database	September 16, 2019
Letter of Final Determination	March 18, 2020
Maps and FIS became Effective	September 18, 2020

**All projected dates are subject to revision as the project progresses*

Figure 26: Map of City and Borough of Juneau Risk MAP Study Scope



This page intentionally left blank

Kenai Peninsula Borough

2011- 2016 Coastal Flood Study

FEMA and the State of Alaska have finalized a coastal Risk MAP Study in the Kenai Peninsula Borough that began in 2011.

Coastal Flood Study Scope of Work

The scope of work of the Kenai Peninsula Borough Risk MAP Study included:

- 28 miles of detailed coastal studies, as well 15 miles of riverine studies in the following locations:
    - ◊ Cooper Creek – 8 miles of detailed study
    - ◊ Ninilchik – 2 miles of detailed study
    - ◊ Anchor Point – 5 miles of detailed study
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries.
- LiDAR data was collected in 2011 and delivered to the community.
- All of the above datasets will be in the North American Vertical Datum of 1988.
- A multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk MAP study. Risk assessments were completed for tsunami, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report.
- Three Resilience Workshops held in the Borough on August 22, 23, and 24, 2017. During the Resilience Workshops, community resilience needs, priorities and priority actions were identified.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance Rate Maps became effective on October 20, 2016.

2020 Kenai River Physical Map Revision

On May 1, 2020, a Flood Study Kick-off Meeting with FEMA, State and Local stakeholders to discuss the project scope, engineering approaches, and discuss the data collection and modeling completed to date.

Next Steps

Engineering Model Notification letters will be sent electronically to the local communities. These letters detail the engineering models that will be used in the hydrologic and hydraulic modeling and provide the communities with the opportunity to give feedback on the modeling choices. Generally, we are using standard industry models. Communities are not required to respond to this notice. However, if one would like to better understand the model choices we make and/or provide feedback, let us know and we can talk this through.

.

Kenai River Flood Study Scope of Work

The scope of work of the Kenai River Flood Study includes (see also map on next page):

U.S. Army Corps of Engineers, Alaska District

- 1-D detailed analysis for 47 miles, outlet of Skilak Lake to mouth of Kenai River
- Multi-frequency analysis (10%, 25%, 50%, 1% and 0.2%)
- Water surface elevation and depth grids • 1-ft increment inundation (for gages)

FEMA Risk MAP

- Floodway modeling and mapping

National Weather Service

- Calibrated model with 1995 and 2012 flood events.

Recent Activity

The Engineering Model Notification letters were sent electronically to the local communities on July 30, 2020. Those letters detailed the engineering models that will be used in the hydrologic and hydraulic modeling and provided the communities with the opportunity to give feedback on the modeling choices.

Hydrologic and hydraulic modeling are being finalized by the US Army Corps of Engineers (USACE) is currently working to complete these tasks. FEMA's mapping contractor has begun the floodway analysis. All draft modeling is expected to be complete toward the beginning of 2022. Once all draft modeling has concluded, FEMA will share draft maps and then schedule a Flood Risk Review (FRR) Meeting to discuss the model results and next steps with stakeholders.

The table below illustrates project status and includes major milestones with dates:

Table 16: Kenai River Flood Study Project Status

Activity	Actual or Projected End Date
Flood Study Kick-Off/Scoping Meeting	May 1, 2020
Draft Map Release	January/February 2022*
Flood Risk Review (FRR) Meeting	February/March 2022*
Preliminary DFIRM/FIS Release	Fall 2022*
Consultation Coordination Officers (CCO) Meeting	Winter 2022*
Public Meeting/Workshop	Summer 2022*
Appeal Period Starts	Winter/Spring 2023*
Appeal Period Ends	Summer/Fall 2023*
Letter of Final Determination	Fall/Winter 2023*
Maps and FIS become Effective	Spring/Summer 2024*

**All projected dates are subject to revision as the project progresses*

Figure 27: Map of Kenai River Flood Study Project Scope

This page intentionally left blank

Ketchikan Gateway Borough

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the Ketchikan Gateway Borough that began in 2013.

Scope of Work

The scope of work of the Ketchikan Gateway Borough Risk MAP Study includes (see also the map below):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. Updated detailed modeling will be completed for 0.99 miles on Hoadley Creek, 1.2 miles of Ketchikan Creek, and 1 mile on Schoenbar Creek. Redelineation using new LiDAR will be completed for 0.08 miles of Carlanna Creek. The draft maps will be completed in Fall 2015.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- Collection of LiDAR data in Summer of 2014. This data will be delivered to the community in the Fall 2014.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.

Status of Ketchikan Gateway Borough Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held August 7, 2013 where community hazard concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the watershed. After the Discovery Meeting, community hazard concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

Draft floodplain maps were released on March 7, 2016. These maps show the proposed riverine and coastal floodplains.

The Flood Risk Review (FRR) meeting was held on August 4, 2016 and attended by representatives of Ketchikan Gateway Borough, City of Ketchikan, Village of Saxman, FEMA, State of Alaska, and FEMA's mapping contractor. Draft floodplain maps and study methods were reviewed. The 30-day comment period following the meeting ended on September 4, 2016. The list below summarizes the feedback received and how the comments are being addressed.

1. The Borough provided a hardcopy of the Whipple Creek Floodplain Study which was performed by the U.S. Army Corps of Engineers. This study may be incorporated into the regulatory floodplain mapping as a Letter of Map Revision (LOMR) at the community's request.
2. The Borough requested that a panel be added to the regulatory maps to include coastal flood hazard areas at the end of North Tongass Highway. The requested panel is being added to the maps.
3. It was noted at the FRR meeting, that the areas that were not included in the coastal or riverine analysis were mapped as unshaded Zone X. These areas may have been regulated as Zone D.
4. FEMA and its mapping contractor are reviewing these areas to determine the appropriate flood zone. The floodplain for Hoadley Creek at Baranof Avenue is being updated. The Borough had questions regarding whether the divided flow from the culvert would impact the building on the South side of Baranof Avenue. It was noted it could diverge along Carlanna Lake Road STARR has evaluated the area and is revising the floodplain in the vicinity of the building. Flood hazards along Carlanna Lake Road are not being delineated.
5. Several attendees at the FRR meeting questioned the vertical datum conversion. FEMA's mapping contractor confirmed that the correct conversion is being used.

The project team released preliminary mapping products on May 5, 2017 including preliminary FIRM panels, preliminary FIS, and a preliminary Summary of Map Actions (SOMA). These products were developed with consideration of community comments noted during the Flood Risk Review meeting on August 4, 2016.

A Consultation Coordination Officers (CCO) meeting was held ton July 18, 2017 at the Ketchikan Gateway Borough offices to present the preliminary FIRM and data to the community officials. During this meeting, differences between the new and the effective FIRM were presented, along with an overview of the appeals and map adoption processes.

A public meeting was held in Ketchikan on January 25, 2018. The formal appeals and comment period began on February 2, 2018 and ended on May 2, 2018. The appeal period is the time when comments and appeals, with supporting technical data, may be submitted for review for possible incorporation into the maps. Ketchikan Gateway Borough submitted a package of comments regarding the validity of the Preliminary FIRM. The comments submitted concern the study methods, the topographic data used in the study, the delineation of the Special Flood Hazard Areas (SFHAs), and the BFEs. Ketchikan Gateway Borough requested re-evaluation of properties along the coast, an extension of the appeals period to one

year, an estimate of flood insurance premiums for properties within the SFHA, and verification of the SFHA and BFEs shown on the preliminary FIRM.

Recent Activity

Revised preliminary products were created based on the input received regarding the coastal and riverine analyses and mapping. The revised mapping products were issued on August 28, 2020, and may be downloaded from FEMA's Flood Map Service Center website here. The Revised Preliminary mapping includes the following changes:

- Updates to the coastal analysis and mapping, including additional transects and detail along the entire coastal study area based on comments received during the appeal period

- The hydraulic analysis for Hoadley Creek, Ketchikan Creek, and Schoenbar Creek were revised utilizing reduced peak flow estimates based on updated guidance provided in the Scientific Investigation Report (SIR) 2016-5024 titled "Estimating Flood Magnitude and Frequency at Gaged and Ungaged Sites on Streams in Alaska and Conterminous Basins in Canada, Based on Data through Water Year 2012"

In addition, a second Consultation Coordination Officers (CCO) meeting was held via webinar on December 8, 2020 to present the revised preliminary FIRMs and data to the community officials and discuss the changes that have occurred since the first preliminary release. The meeting was attended by the City of Ketchikan, Ketchikan Gateway Borough, FEMA, the State of Alaska, and FEMA's mapping contractor.

Next Steps

Following the CCO meeting, an in-person public meeting is typically scheduled to allow property owners to view the revised preliminary data and obtain information from FEMA, state officials, and mapping partners regarding flood insurance and flood risk. Due to the meeting restrictions in place to reduce exposure to the COVID-19 virus, FEMA and their community engagement contractor, Resilience Action Partners, have been working with the communities to explore solutions to host a virtual public meeting using StoryMap as an online resource to obtain information similar to what is normally available at an in-person public meeting.

Via the StoryMap, property owners and community residents will be able to learn about the flood mapping process, what the changes mean for them, and gain information about the National Flood Insurance Program (NFIP). Residents may also find direct contact information should they need additional support.

FEMA will assess the level of interaction from the public via the StoryMap and work with local officials to determine if any further outreach is needed. Once public outreach has been completed, a second statutory 90-day appeal period will be initiated to provide due process to all impacted communities. The timing of the appeal period will be determined in the future.

FEMA has prepared two viewers to aid in the communities' review of the revised maps as linked below:
Preliminary (2017) vs. Revised Preliminary (2020): https://fema.maps.arcgis.com/home/item.html?id=c9870d6167cc4b1d8d305d2f5b5e1e46
Effective (1990) vs. Revised Preliminary (2020): https://fema.maps.arcgis.com/home/item.html?id=566088f4e3aa4429a345a7e01cc2715a

The table below illustrates project status and includes major milestones with dates:

Table 17: Ketchikan Project Status

Activity	Actual or Projected End Date
Ketchikan Gateway Borough Discovery Interview	June 17, 2013
Ketchikan Gateway Borough Discovery Meeting	August 7, 2013
Base Map Acquisition	February 2, 2014
Discovery Report	Summer 2014
Perform Field Survey	August 31, 2014
Develop Topographic Data	November 30, 2014
Hydrologic Analysis	December 31, 2014
Perform Coastal Analysis/Hydraulic Analysis	July 17, 2015
Perform Floodplain Mapping	September 2015
Develop DFRIM Database	September 25, 2015
Draft Work Maps Released	March 7, 2016
Flood Risk Review Meeting	August 4, 2016
Preliminary DFIRM/FIS Release	May 5, 2017
Consultation Coordination Officers (CCO) Meeting	July 18, 2017
Public Meeting/Workshop	January 25, 2018
1st 90-Day Appeal Period Starts	February 2, 2018
1st 90-Day Appeal Period Ends	May 2, 2018
Draft Multi-Hazard Risk Report	November 2018
Comment Resolution Meeting	July 24, 2019
Revised Preliminary FIRM/FIS Release	August 28, 2020*
2nd Consultation Coordination Officers (CCO) Meeting (Webinar)	December 8, 2020
2nd Public Meeting/Workshop	To Be Determined*
2nd 90-Day Appeal Period Starts	To Be Determined*
2nd 90-Day Appeal Period Ends	To Be Determined*
Letter of Final Determination	To Be Determined*
Delivery of Final Risk Report and Risk Assessment Database	To Be Determined*
Maps and FIS become Effective	To Be Determined*

**All projected dates are subject to revision as the project progresses*

Figure 28: Map of Ketchikan Gateway Borough Coastal Study Scope

This page intentionally left blank

City of Kotzebue

A Risk MAP Discovery meeting was held February 23, 2011 in order to gain a clearer understanding of the flood hazard mapping, mitigation planning, and communication needs of the City of Kotzebue. The City's desired study areas are listed below.

Table 18: Desired Risk MAP Study Areas for the City of Kotzebue

Priority	Study Area	Study Length	Location Description	Study Type
1	Kotzebue Sound	2.64	Shoreline study within city limits	Coastal Detailed
2	Kotzebue Lagoon	6.76	Along the Shoreline of the Kotzebue lagoon	Detailed
3	Swan Lake	0.59	Shoreline study within city limits	Detailed
4	Ponding Areas	<1	Low areas within the city limits subject to flooding from ice thaw	Approximate

After reviewing the mapping needs identified during Discovery and current funding availability, FEMA informed the City that due to federal funding constraints, a new flood study would not be initiated this year; however the area will remain a high priority for a new study when funds become available.

Products that would be provided to Kotzebue through its Risk MAP project include:

- Available topographic data as well as new data in the future, when it becomes available
- Updated non regulatory digital flood hazard data
- Areas of Mitigation Areas of Interest findings and recommendations based on best available data
- Non-regulatory Risk MAP database containing digital project data
- Non-regulatory Risk MAP map and report depicting risk assessment results

This page intentionally left blank

City of Kwethluk

The Risk MAP process began for the City of Kwethluk in the summer of 2016.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Kwethluk on June 16, 2016 to conduct a Risk MAP Discovery Meeting with City of Kwethluk staff and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Kwethluk.

Kwethluk's Local Hazard Mitigation Plan (LHMP) was completed in 2009, so the plan has expired. The City is considering an update to the plan in the near future. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire, permafrost and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

Figure 29: Kwethluk flood, 2012

This page intentionally left blank

Matanuska-Susitna Borough

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the Ketchikan Gateway Borough that began in 2013.

Scope of Work

The scope of work of the Matanuska-Susitna Borough Risk MAP Study includes (see also the map below):

Detailed hydrology and hydraulic modeling to include 71.9 miles of riverine study, perform approximate riverine analysis for 316.6 miles, and delineate 15.4 miles of existing areas. Floodplain boundaries will be updated for the 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. The rivers to be updated include:

- Updated detailed modeling (Zone AE) will be completed for:
  - Little Susitna River (including Split Flows 1-3) = 39.2 miles
  - Willow Creek = 13.3 miles
  - Willow Creek Tributary = 7.1 miles

- Limited detail modeling (Zone A with structures) will be completed for:
  - Wasilla Creek = 10.7 miles

- Updated Approximate Studies (Zone A) will be completed for:
  - Upper Matanuska River = 14 miles
  - Point MacKenzie = 2 miles – roughly from Walsop Road to 2 miles downstream of Walsop Road.
  - Various Zone A = 289.9 miles

- Redelineation of Effective Detailed Studies (Zone AE) will be completed for:
  - Deception Creek and Tributaries 1-3 = 15.4 miles

- US Army Corps of Engineers (USACE) Studies (Leverage - Zone AE) will also be incorporated to include:
  - Matanuska River = 3.9 miles
  - Knik River = 2.7 miles
  - Bodenburg Creek = 5.7 miles

Status of Matanuska-Susitna Borough Risk MAP Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held April 23, 2013 where community hazard concerns were identified. These concerns were captured in the Risk MAP

Discovery Report and delivered to the communities in the watershed. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi -hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

Preliminary products (DFIRM panels & FIS report) and data (DFIRM data shapefiles) were mailed on Friday, August 19, 2016 to Matanuska-Susitna Borough and the State of Alaska. The preliminary mailing included: hard copies of preliminary DFIRM panels and FIS report; and digital copies of DFIRM data GIS shapefiles.

The Consultation Coordination Officers (CCO) Meeting was held on January 4, 2017. The CCO meeting is an opportunity for FEMA/State/STARR and Matanuska-Susitna Borough local officials to review the flood data that has been updated, talk through the regulatory process (appeal period, Letter of Final Determination, etc.), and discuss how the Borough would like to proceed with outreach in order to schedule public meeting(s) regarding the preliminary DFIRM maps.

Four (4) public meetings were held on March 15 and 16, 2017 in the communities of Willow, Meadow Lakes, Wasilla and Palmer. Stakeholders and the public were invited to attend the meetings, which had subject matter experts from FEMA, FEMA's mapping contractor , State of Alaska, and Matanuska-Susitna Borough on hand to discuss how the flood maps were developed, provide landowners with the flood designation for their property, and answer questions on floodplain regulations and insurance rates.

The appeal period for the Matanuska-Susitna Borough Flood Risk study Began on October 27, 2017 and ended January 25, 2018. Following the 90-day appeals period, comment resolution letters, including "before and after" maps of proposed revisions, were mailed to the Matanuska-Susitna Borough on May 10, 2018. Revised preliminary products, updated to reflect the proposed revisions, were distributed to the Borough on August 24, 2018. There was a 30-day comment period following distribution of the revised preliminary products.

The Final Flood Hazard Determinations were posted in the Federal Register on May 20, 2019. The Letter of Final BFE Determinations (LFD) was issued on March 27, 2019. An LFD is a letter FEMA sends to the Chief Executive Officer of a community stating that a new or updated Flood Insurance Rate Map (FIRM) or Digital FIRM will become effective in six months. The letter also notifies each affected flood-prone community participating in the National Flood Insurance Program (NFIP) that it must adopt a compliant floodplain management ordinance by the maps effective date to remain participants in good standing.

Recent Activity

The FIRMs and Flood Insurance Study (FIS) became effective on September 27, 2019, six months after the LFD was issued. Community officials were sent the Revalidation Letter that lists previously issued Letters of Map Change (LOMC) that have been reaffirmed for the new FIRM. The Revalidation Letter became effective one day after the publication of the community's revised final
FIRM. The Revalidation Letter does not list LOMCs that have been incorporated into the revised panel,

LOMCs that are superseded by new or revised mapping, or LOMCs that are no longer valid. While the Summary of Map Actions (SOMA) is a preliminary assessment of which LOMCs may still be valid after the new maps are issued, the Revalidation Letter is the final, effective determination of the LOMCs which remain valid. The SOMA and the Revalidation Letter are meant to assist community officials in the maintenance of the community's FIRM.

FEMA funded its contractor, STARR II, to develop a multi-hazard Risk Report and the State of Alaska has prepared a Resilience Dashboard for the Matanuska-Susitna Borough as part of the ongoing Risk MAP study. The Risk Report includes a risk assessment of earthquake, flood, and landslide hazards. Hazus, FEMA's loss estimation software, was used to assess the potential building losses from earthquake and flood hazards. The draft multi-hazard Risk Report and Resilience Dashboard were provided to MatSu Borough for comment on January 10, 2017. At the request of Matanuska-Susitna Borough and the State of Alaska, the comments due date has been extended to allow enough time for a thorough review of the draft Risk Report. Once all review comments on the draft Risk Report and Resilience Dashboard have been addressed, a Resilience Workshop will be held to discuss the results of the risk assessments and risk reduction strategies.

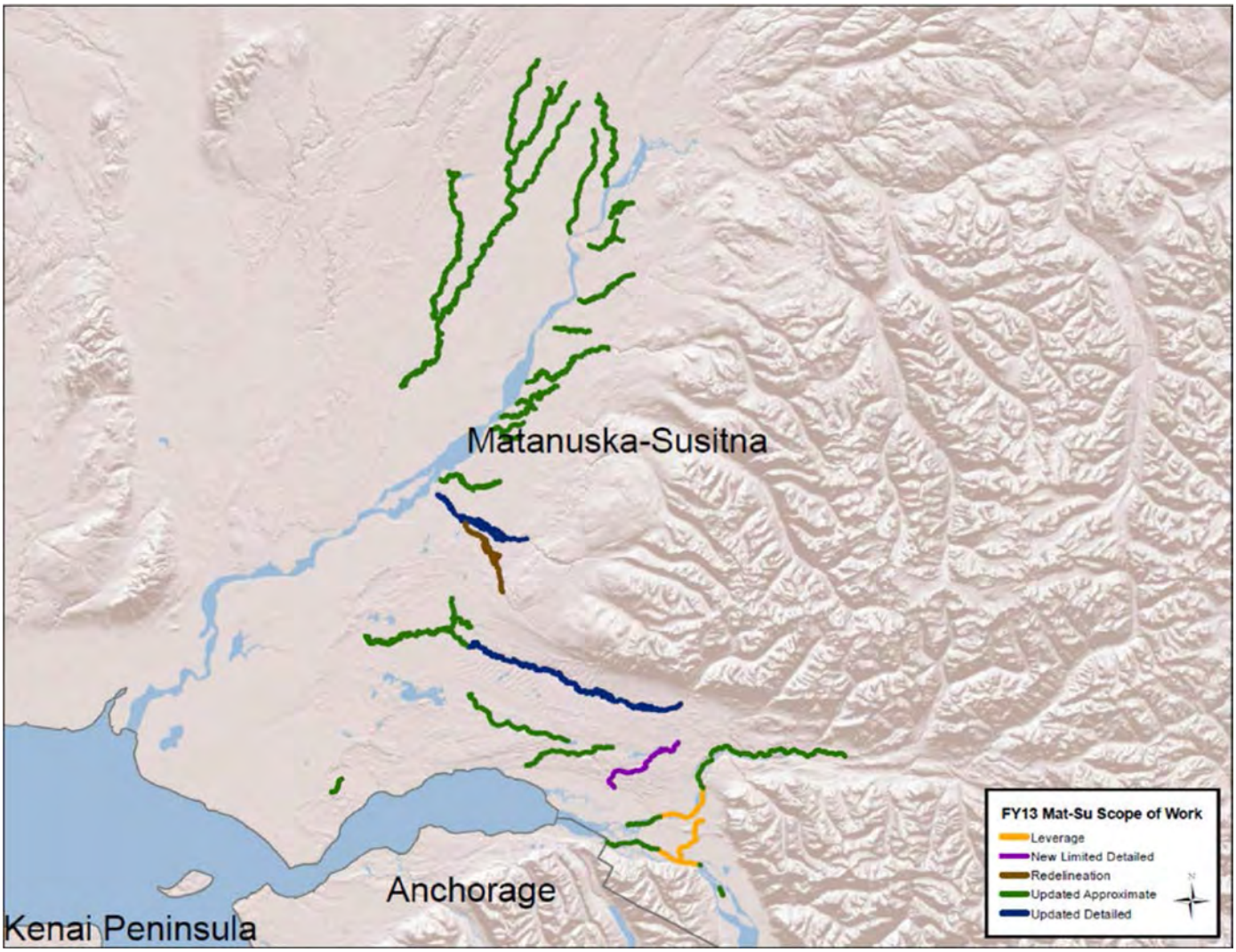
The following table illustrates project status and includes major milestones with dates:

Table 19: Matanuska-Susitna Borough Project Status

Activity	Projected Completion Date*
Matanuska-Susitna Discovery Interview	March 11, 2013
Matanuska-Susitna Discovery Meeting	April 23, 2013
Flood Study Kick-Off Meeting	December 13, 2013
Draft Workmaps Released	August 28, 2015
Flood Risk Review Meeting	January 20, 2016
Preliminary DFIRM/FIS Released	August 19, 2016
Consultation Coordination Officers (CCO) Meeting	January 4, 2017
Public Meeting/Workshop	March 15 - 16, 2017
Draft Multi-Hazard Risk Report	January 10, 2017
90-Day Appeal Period Starts	October 27, 2017
90-Day Appeal Period Ends	January 25, 2018
Revised Preliminary DFIRM/FIS Release	August 24, 2018
Letter of Final Determination	March 27, 2019
Risk MAP Resilience Workshop	To Be Determined*
Delivery of Final Risk Report and Risk Assessment Database	August 14, 2019
Maps and FIS become Effective	September 27, 2019

**All projected dates are subject to revision as the project progresses*

Figure 30: Map of Matanuska-Susitna Borough Project Scope



City and Borough of Sitka

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City and Borough of Sitka that began in 2013.

Study Scope

The scope of work of the City and Borough of Sitka Risk MAP Study includes (see also the map on page 58):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. 0.67 miles of Swan Lake will be updated using approximate modeling and 1 mile of Indian River will be redelineated using new LiDAR. The draft maps will be completed in Spring/Summer 2015.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- Collect LiDAR in Spring/Summer of 2014. This data will be delivered to the community by Sept. 30, 2014.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.

Sitka Project Status

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held August 5, 2013 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the City and Borough of Sitka. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products based on community-identified resilience needs.

FEMA funded its mapping contractor to develop a multi-hazard Risk Report for the Sitka area as part of the ongoing Risk MAP study. The Risk Report will include a risk assessment of earthquake, erosion,

flood, landslides, and tsunami hazards. Hazus, FEMA's loss estimation software, will be used to assess earthquake and flood results. Additionally, FEMA has worked with the Alaska Department of Geological and Geophysical Surveys Division (DGGS) to conduct an even more extensive study of the landslide hazards and risks in the area. Once the risk assessments are completed, they will be compiled into the Risk MAP Risk Report and a Resilience Workshop will be held to discuss the assessment results and risk reduction strategies.

On June 30, 2016, FEMA issued updated preliminary mapping for the City and Borough of Sitka. FEMA held a Consultation Coordination Officers (CCO) Meeting via a webinar on October 13 for the City and Borough of Sitka. The CCO Meeting provided information to the community about the map review process and addressed initial questions regarding the preliminary flood hazard data.

At the meeting, there was discussion about FEMA supporting the community of Sitka with an additional Open House/Public Meeting, which was held on January 25, 2017. The Public Meeting/Open House provided members of the community the opportunity to ask flood mapping and insurance questions to subject matter experts.

The 90-day appeal period began on February 27, 2017 and ended on May 28, 2017. The following appeal has been filed:

Appeal I:

The City and Borough of Sitka Public Works Department submitted an updated Swan Lake HEC-RAS model that lowers the base flood elevation for the lake. The new HEC-RAS project incorporated a new survey performed on an existing pipe culvert in the lake vicinity. In addition to the pipe information, the survey provided more detailed information for the area where the lake could overflow into the round about where Lake Street, Halibut Point Road, and Sawmill Creek Road intersect. The result of the calculations is that the water surface elevation for the lake is at 33.1 compared to a water surface elevation of 34.4 provided by FEMA. This new lake delineation will result in a revised preliminary issuance.

Revised Preliminary issuance in this case will occur due to the following changes:

- Areas showing new or revised Base Flood Elevations (BFEs) or base flood depths;
- Areas showing new or revised Special Flood Hazard Area (SFHA) boundaries (including increases or decreases in the extent of the SFHA); and
- Areas where there is a change in SFHA zone designation

Appeal/Comment resolution letters were mailed to the City and Borough of Sitka, AK on October 9, 2017. These letters categorized each circumstance as either an appeal or comment and contained language on whether the changes proposed to FEMA justified updates to the preliminary maps. If changes were warranted, a proof panel was generated to show the update(s). The City and Borough had 30 days to ensure all previous comments have been addressed.

The Revised Preliminary DFIRM/FIS release for the City and Borough of Sitka occurred on June 27, 2018. The revised preliminary products are available for download on FEMA's Flood Map Service Center website. Following the issuance of the revised preliminary maps, the community had a 30-day review period to provide comments.

Recent Activity

The maps and FIS became effective on August 1, 2019. The effective maps are available for download on FEMA's Flood Map Service Center website (https://msc.fema.gov/portal/advanceSearch). Community officials were mailed the Revalidation Letter that lists previously issued Letters of Map Change (LOMC) that have been reaffirmed for the new FIRM. When the maps become effective, the community is expected to have updated its floodplain ordinances to reflect this better information in order to remain participants in good standing in the National Flood Insurance Program (NFIP).

The final multi-hazard Risk Report was developed for the City and Borough of Sitka as part of the ongoing Risk MAP study, which was provided to the community on December 12, 2019. The Risk Report includes a risk assessment of earthquake, erosion, flood, landslides, and tsunami hazards. Hazus, FEMA's loss estimation software, was used to assess earthquake and flood results. Additionally, FEMA has worked with the State of Alaska Department of Geological and Geophysical Surveys Division (DGGS) to conduct an even more extensive study of the landslide hazards and risks in the area which has been integrated into the Risk MAP Risk Report.

Next Steps

A Resilience Workshop can be held at the City and Borough of Sitka's convenience to discuss the assessment results and risk reduction strategies.

The table below illustrates project status and includes major milestones with dates:

Table 20: Sitka Project Status

Activity	Actual or Projected End Date
Risk MAP Discovery Meeting	August 5, 2013
Flood Risk Review (FRR) Meeting/Draft Maps	February 2, 2016
Preliminary DFIRM/FIS Release	June 30, 2016
Consultation Coordination Officers (CCO) Webinar	October 13, 2016
Public Meeting/Open House	January 25, 2017
90-Day Appeal Period Start	February 27, 2017
90-Day Appeal Period Ends	May 28, 2017
Revised Preliminary DFIRM/FIS Release	September 12, 2018
Draft Multi-Hazard Risk Report	January 30, 2019
Letter of Final Determination	February 1, 2019
Draft Risk Assessment Database	March 15, 2019
Maps and FIS become Effective	August 1, 2019
Delivery of Final Report and Risk Assessment Database	December 12, 2019
Risk MAP Resilience Workshop	To Be Determined*

**All projected dates are subject to revision as the project progresses*

Figure 31: Map of Sitka Study Scope

City of Seward

In 2010, FEMA initiated a Risk MAP project to develop a Physical Map Revision of the Japanese Creek Alluvial Fan. The project scope of work includes 2.5 miles of detailed study near the confluence with Lowell Creek. Because the study area includes a levee that hasn't been accredited for National Flood Insurance Program (NFIP) requirements, the project has been placed on hold until FEMA finalizes its guidance for mapping non-accredited levees.

The Seward coastal area was also part of Coastal Physical Map Revision of the Kenai Peninsula Borough (see study area identified on the map on page 64).

Coastal Study Scope

Specific to the City of Seward, the scope of work of the Kenai Peninsula Borough Risk MAP Study includes:

- Ten miles of detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics) of Resurrection Bay.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.

Status of Seward Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held March 2, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the Borough. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance

Rate Maps became effective on October 20, 2016.
FEMA developed a multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk MAP study. Risk assessments have been completed for tsunami, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report. The State Risk MAP Coordinator sent the Risk Report out for review on October 6, 2016 and requested comments back by October 28, 2016.

On August 14, 2017, FEMA and the State held a webinar to review the data and results of the Risk Report.

Following this, the State and FEMA conducted a Resilience Workshops in the City of Seward on August 22, 2017. During the Resilience Workshop, community resilience needs, priorities and priority actions were identified. State and federal partners will address the priority actions and apprize local residents of accomplishments.

The table below illustrates project status and includes major milestones with dates:

Table 21: Seward Project Status

Activity	Actual or Projected End Date
Seward Discovery Interview	February 2, 2011
Seward Discovery Meeting	March 2, 2011
Discovery Report	May 2011
Flood Study Kick-Off Meeting	July 23-26, 2012
Draft Maps Released/ Flood Risk Review Meeting	August 27-28, 2013
Preliminary DFIRM/FIS Release	June 13, 2014
Consultation Coordination Officers (CCO) Meeting	September 9-11, 2014
Public Meeting/Workshop	September 9-11, 2014
90-day Appeal Period Start Date	1st: January 28, 2015; 2nd: August 12, 2015
90-day Appeal Period End Date	1st: April 28, 2015; 2nd: November 10, 2015
Issue Letter of Final Determination	April 20, 2016
Draft Multi-Hazard Risk Report	October 6, 2016
Maps and FIS Become Effective	October 20, 2016
Risk MAP Resilience Workshop	August 22-24, 2017
Delivery of Final Risk Report and Risk Assessment Database	January 11, 2018

City of Valdez

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City of Valdez that began in 2013.

Scope of Work

The scope of work of the Valdez Risk MAP Study includes (see also the map below):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. A riverine analysis will also be performed to include hydrology and hydraulic modeling for 3.8 miles of detailed riverine study on Mineral Creek, 11.7 miles of detailed riverine study on Lowe River, 4.6 miles of detailed riverine study on Valdez Glacier Stream, 2.2 miles of detailed riverine study on Robe River, and 18.7 miles of approximate riverine modeling on various streams. Floodplain delineations and the Flood Insurance Study will be updated for the entire City. A draft map for the coastal analysis will be completed in spring 2014. The draft map for the riverine analysis will be completed in Fall 2014.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the City. A FIS is a book that contains information regarding flooding in a city and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a city and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of regulatory Flood Insurance Rate Map (FIRM) map for all panels within the City which identifies the City's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in winter 2014.
- Guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.

Valdez Project Status

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held January 24, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the City of Valdez. After the Discovery Meeting, the City of Valdez's concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The Valdez Riverine Draft Workmaps were released on April 30, 2015. A Flood Risk Review (FRR)

Meeting was recently held Wednesday, August 12, 2015 via web-conference to discuss the draft maps and display the updated analysis of the proposed floodplains.
FEMA's mapping contractor addressed the comments raised by the community originating from the Flood Risk Review meeting of August 2015. Subsequently, FEMA and its mapping contractor met with the community on April 12th, 2016 to review the comment resolutions agreed to move forward with producing the Preliminary Digital Flood Insurance Rate Maps (DFIRMs), which were released on September 15, 2016.

A Consultation Coordination Officers (CCO) meeting was held November 30th, 2016 in the City of Valdez to discuss the results of the project study and preliminary maps with the community officials. Also, the Levee Analysis and Mapping Procedure (LAMP) kick-off meeting was held on January 12, 2017 to introduce the production team and discuss the schedule and scope of the LAMP analysis of the Alpine Woods Levee.

A revised preliminary FIRM/FIS was released February 1, 2017 to correct portions of the special flood hazard area and to add the effective hydraulic model cross sections for the Lowe River within the levee seclusion box. Four revised preliminary panels were re-released to the community superseding their respective preliminary panels that were distributed on September 15, 2016.

On April 6, 2017, FEMA and the State held a Public Meeting/Workshop in the City of Valdez. A second revised preliminary FIRM/FIS was released April 10, 2017.

The 90-day appeal period Began on November 29, 2017 and ended on February 27, 2018. As no comments were received during the appeal period, the post-preliminary process production continued towards the Letter of Final Determination (LFD). On July 3, 2018, the six-month compliance period was initiated with the issuance of the Letter of Final Determination (LFD). The City of Valdez FIRMs became effective on January 3, 2019.

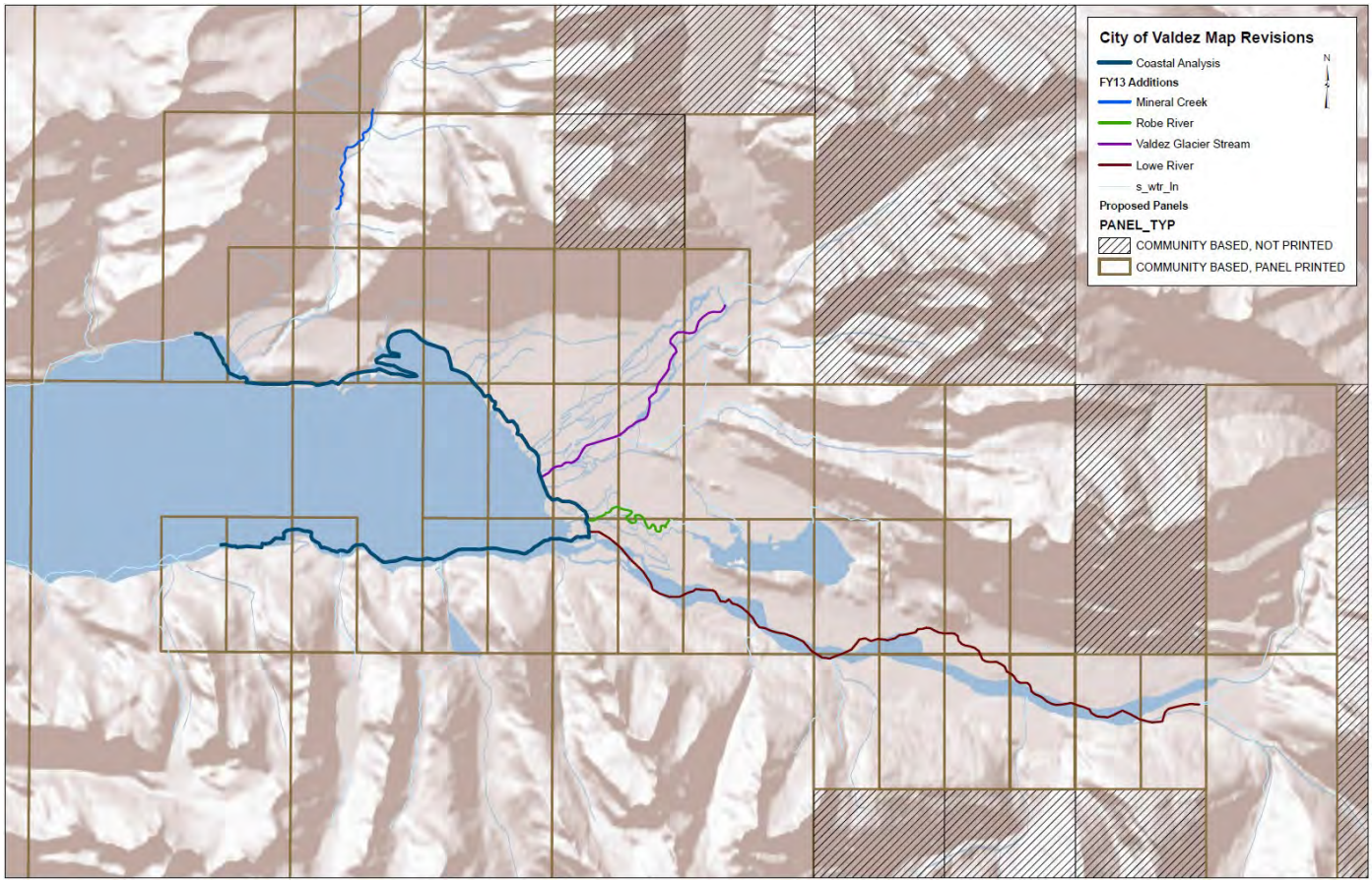
The table on the next page illustrates project status and includes major milestones with dates:

Table 22: Valdez Project Status

Activity	Actual or Projected End Date
Valdez Discovery Interview	February 28, 2011
Valdez Discovery Meeting	July 11, 2011
Discovery Report	Summer 2011
Coastal Analysis	Spring 2014
Draft Map Release – Coastal	April 2014
Flood Risk Review Meeting – Coastal	June 26, 2014
Riverine Analysis	Winter 2014/Spring 2015
Draft Map Release – Riverine	April 30, 2015
Flood Risk Review Meeting – Riverine	August 12, 2015
Preliminary DFIRM/FIS Release	September 15, 2016
Consultation Coordination Officers (CCO) Meeting	November 30, 2016
Revised Preliminary DFIRM/FIS Release (first)	February 1, 2017
Public Meeting/Workshop	April 6, 2017
Revised Preliminary DFIRM/FIS Release (second)	April 10, 2017
90-Day Appeal Period Starts	November 29, 2017
90-Day Appeal Period Ends	February 27, 2018
Letter of Final Determination Issued	July 3, 2018
Draft Multi-Hazard Risk Report	To Be Determined*
Delivery of Final Risk Report/ Risk Assessment Database	To Be Determined*
DFIRM/FIS Effective Date	January 3, 2019*

**All projected dates are subject to revision as the project progresses*

Figure 32: Map of Valdez Study Scope

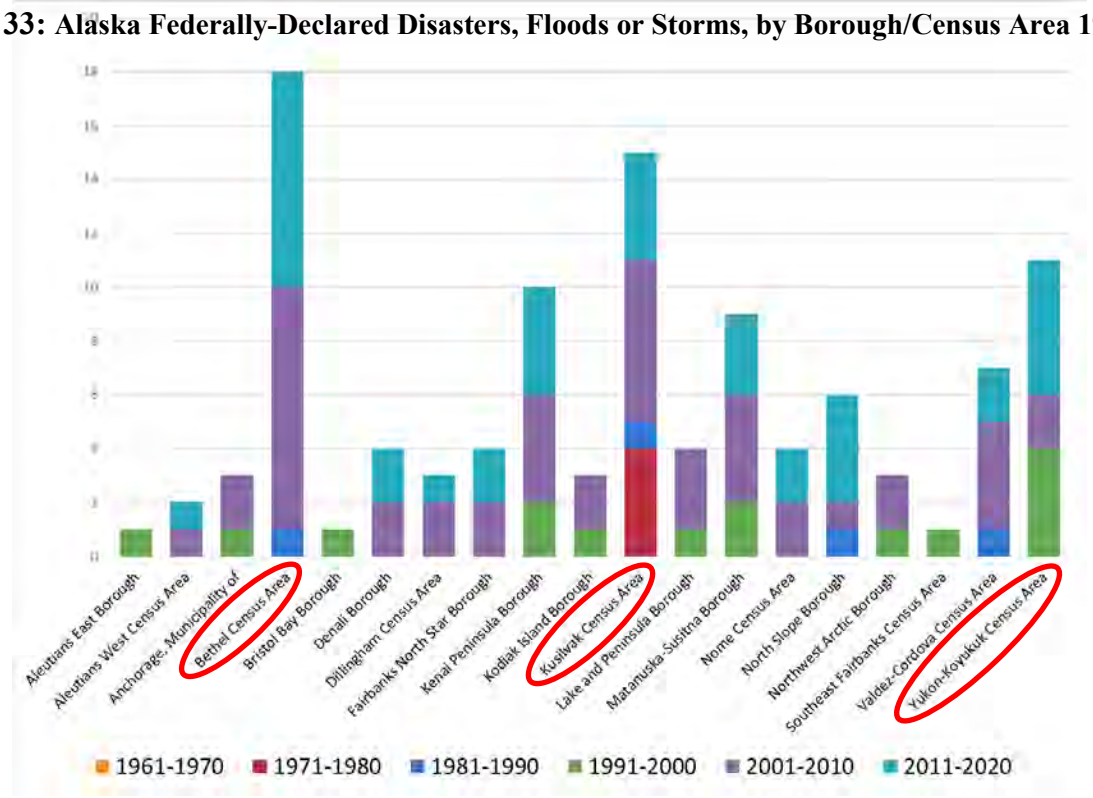


Chapter Four: Assistance to Environmentally Threatened Alaska Native Villages

On February 16, 2017, during FEMA Region 10's 2017 Mitigation Summit, a number of stakeholders from federal, state, and non-governmental organizations met to discuss the possibility of developing a Risk Mapping, Assessment and Planning (Risk MAP) approach that focuses on Alaska Native communities who are increasingly being impacted by environmental threats such as flooding, erosion and permafrost degradation.

As illustrated in Figure 4 of the Introduction (page 5), over the last several decades, the number of presidentially-declared disasters in Alaska has increased dramatically. The majority of these disasters are caused by flooding and severe storms. Over the past decade, most of these events have occurred in the Bethel, Kusilvak and Yukon-Koyukuk census areas (see Figure 33, below). These census areas are comprised of small, remote, predominantly Alaska Native communities. The communities are especially vulnerable because they are located within Alaska's vast unorganized borough where there is no regional form of government to provide services and other resources to address disaster events. Only 9 of the 87 Alaska Native villages within these three census areas participate in the National Flood Insurance Program (NFIP). More than half of the villages within these census areas are ineligible to participate in the NFIP because they are not incorporated municipalities. Storm events are increasingly putting these communities at risk to loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in western Alaska (Terenzi, 2014).

Figure 33: Alaska Federally-Declared Disasters, Floods or Storms, by Borough/Census Area 1961-2020



Data Source: *https://www.fema.gov/api/open/v1/DisasterDeclarationsSummaries.csv*

Risk MAP's approach to building community resilience by increasing local understanding of risk, and enhancing local decision-making to take action against risk has great potential for these communities. It is very difficult for a community to know how to respond to hazards without clear understanding and guidance on the nature of the hazard, what the current and predicted impacts are, and what options there are to address the hazard.

A number of efforts have taken place to address severe flooding, erosion and other natural hazards in Alaska's rural communities. Several key observations and needs have been identified through these efforts:

- Assistance to imperiled communities should be based on a fair and defensible methodology which prioritizes communities by level of threat and need
- The community must be a key player in the decision-making process
- Imperiled communities (and the agencies assisting them) need quantifiable data from which to make informed decisions
- A coordinated, interdisciplinary approach to address community threats is essential to increasing community resilience

Prioritization is the first step in the Risk MAP process. States are asked to develop a quantitative approach to prioritize communities to determine which communities FEMA will study. The State of Alaska developed a prioritization methodology to guide the study of NFIP-participating communities in Alaska. The approach used to prioritize imminently-threatened Alaska Native villages is based on level of threat and need through the Alaska Statewide Threat Assessment.

Interagency coordination is basic to the Risk MAP process, which relies upon partnerships between federal, state, tribal and local government stakeholders. The State of Alaska Risk MAP Coordinator has organized and facilitated interagency working groups (also known as village planning groups) over the past decade for the communities of Newtok, Kivalina, Shaktoolik and Shishmaref. DCRA, the agency responsible for coordinating the State of Alaska's Risk MAP Program, is tasked by two State of Alaska Administrative Orders (AO 231 and AO 239) "to act as the state coordinating agency to coordinate with the other state and federal agencies to propose long-term solutions to the ongoing erosion issues in... affected coastal communities..."

DEVELOPING A STRATEGY

1. Prioritization Methodology

In March 2017, the Denali Commission funded the U.S. Army Corps of Engineers Alaska District, the Cold Regions Research and Engineering Laboratory, and the University of Alaska Fairbanks in a Statewide Threat Assessment Project whose goals was to The goals of this study were to:

1) Assess individual threats to public infrastructure associated with erosion, flooding, and thawing permafrost in Alaska communities
2) Evaluate the combined threat imposed by interactions between erosion, flooding, and thawing permafrost in Alaska communities; and
3) Provide guidance to decision makers regarding the technical information required to develop mitigation or adaptation strategies related to those threats.

The final product of this effort was published by the Denali Commission in November 2019. The rankings and groupings developed under the Threat Assessment are intended to identify those communities requiring additional data collection and risk assessment, with the intent that stakeholder agencies build upon the information presented in the assessment, and collaborate to develop advanced data hosting, design, and decision support tools intended to foster a unified approach to mitigating Alaska's infrastructure challenges. The recommendations for Alaska's future study needs for 2020-2022 (Chapter Nine), are based on this information.

2. Stakeholder Engagement

Potential Stakeholders to the Alaska Native Village Risk MAP process include the Alaska Silver Jackets Team, the State Hazard Mitigation Advisory Committee, Alaska Governor's Office (Tribal Affairs), Bureau of Indian Affairs, Denali Commission, NOAA, HUD, Alaska Native Tribal Health Consortium, NOAA, Arctic Executive Steering Committee Community Resilience Working Group, Native American Rights Fund, State and Federal Department of Transportation, EPA, Western Alaska LCC and Alaska Native Claims Settlement Act (ANCSA) Regional Non-Profit Organizations.

Inter-disciplinary partner engagement will be especially important because FEMA doesn't directly address many of the hazards (or other resilience needs) impacting Alaska Native Villages such as:

- Erosion
- Permafrost Degradation
- Food security
- Human health impacts
- Changing weather conditions
- Community capacity

3. The Risk MAP Process

A unique Risk MAP process will be required to meet the needs of the Alaska Native villages for which we conduct Risk MAP studies. Some suggestions are outlined below:

Pre-Discovery

FEMA and the State will work with the Alaska Native village to understand the needs, resources, and capabilities to support the community in risk reduction and resilience efforts. Ideally, the Risk MAP process would be tied with the Hazard Mitigation Plan update process. The Data Collection and Analysis Phase will begin prior to the Discovery Meeting and continue afterwards once the needs of the village are identified (see Post-Discovery Data Collection and Analysis, below).

Discovery Interview

A telephone interview will be conducted with various stakeholders (regional, state, federal) to share current information, current and past projects, historical knowledge, and to identify who the best people are to attend the in-person Discovery meeting.

Discovery Meeting

The State Risk MAP Coordinator and a few key stakeholders will conduct an in-person Discovery meeting in the village. The purpose of the Discovery meeting is to gather information on the community's perspective about local natural hazards and their risk. This information will be used to prioritize risk and vulnerability assessments and mitigation planning assistance.

Considerations for the meeting include:

- Need for interpreter in villages where English is the second language
- Number of stakeholders attending (We don't want to outnumber attendees)
- Culturally-appropriate ways to present information
  - Community gathering/potluck
  - See Discovery Report suggestion under Risk MAP Products and Tools, below)

Post Meeting Coordination and Project Scope Development

This will be a collaborative effort to identify how we can meet the community's resilience needs and how we can align FEMA's effort with other ongoing efforts.

Post-Discovery Data Collection and Analysis

During this phase of the project, funding will be secured, local multi-hazard data will be collected, and risk and vulnerability assessments will be conducted to evaluate the nature, immediacy, probability and severity of each hazard.

Data Collection and Analysis will be a collaborative effort between a number of stakeholders in order to meet the community's resilience needs. The discussion should include:

- Ways to incorporate local/traditional knowledge with science
- How to incorporate local observation as part of the process. Both the Alaska Native Tribal Health Consortium and the Alaska Division of Geological and Geophysical Surveys have local observer efforts and there is real value in training local observers to document change throughout the study process.

Risk MAP Products and Tools

Discovery Report: a supplement to the report would be more helpful for many communities. DCRA has found that providing a map-sized document which can be hung in a public space, allowing community residents to gather and discuss is often more useful than a multipage report. The traditional Discovery Report could still be prepared to meet the needs of agencies. An example of a translated document can be found here:
https://silverjacketsteam.nfrmp.us/LinkClick.aspx?fileticket=6b_0S-nFCso%3d&portalid=0

Resilience Meeting

The Resilience Meeting provides the community with the opportunity to meet with subject matter experts to discuss how the information, tools and products of the Risk MAP process can be used to inform future planning efforts, reduce risk, and increase local resistance to disaster. A decision on next-steps to implement resilience actions is key to this meeting.

As with the Discovery Meeting, it may be necessary to have an interpreter and to hold the meeting in a community gathering/potluck format. Use of visuals outlining next steps (that can be left in the community) are helpful.

Alaska Coastal Resilience Partnership

Building Capacity and Conducting Coastal Risk Assessments in Remote Alaska Native Communities

The Alaska Division of Community and Regional Affairs (DCRA) Risk Map Program, the Alaska Division of Geological and Geophysical Surveys (DGGS) Coastal Hazards Program, and the Alaska Native Tribal Health Consortium (ANTHC) Center for Environmentally Threatened Communities have joined in the **Alaska Coastal Resilience Partnership** to work with Alaska communities facing coastal flood and erosion hazards with a project titled "Building Capacity and Conducting Coastal Risk Assessments in Remote Alaska Native Communities." The project is funded by the National Fish and Wildlife Foundation with match from the DGGS, ANTHC, and the Denali Commission. The State Risk MAP Coordinator is participating in this effort as part of her Risk MAP Statement of Work.

The project will take an innovative, comprehensive, efficient, culturally sensitive, and forward-looking approach to building capacity and conducting urgently needed coastal risk assessments for flooding and erosion in 44 remote Alaska Native communities, assisting with the development of informed local resilience strategies, mitigation solutions and the future design of restoration projects.

The project is important because a recent **Statewide Threat Assessment** prepared for the Denali Commission found that 144 remote Alaska Native Communities are at some degree of infrastructure damage from the environmental threats of erosion, flooding, and permafrost thaw. Completing site-specific data collection, risk assessments, and planning is critical to inform local decisions about reducing risk from erosion and flooding. The project will include the following tasks:

Baseline Data Collection to support Flood Modeling

The project focuses on bringing all coastal communities in northern and western Alaska to the same level of baseline data by strategically filling remaining gaps in baseline data and updating datasets that are outdated. Coastal geologists will travel to 20 communities to:

- Install water level sensors or erosion monitoring equipment with 14 communities (*five of which are match from DGGS) to* support the National Water Level Observation Network and a low-bandwidth website managed by DGGS for flood and erosion hazard information that links to published materials, real-time, and monitoring data developed for individual communities;
- Collect lidar in six communities where digital surface models are not sufficient for flood modeling
- Collect single-beam sonar bathymetric data, UAV-collected orthoimagery, high water mark, and first-floor elevation GNSS-survey data for critical infrastructure in 20 communities *(nine are match from the Alaska Ocean Observing System)*

Coastal Erosion and Flood Risk Assessments

- Leverage an ongoing project to map historical erosion rates and project future shorelines on infrastructure at 44 communities (all are match from Denali Commission);
- Develop coastal storm inundation records and risk assessment maps, reports, and an online tool with 33 communities to inform community planning and the development of mitigation solutions *(nine are match from DGGS);*

Coastal Flood Modeling

The project leverages the baseline data collection and coastal erosion and flood risk assessment activities to conduct storm surge and sea level change modeling at the four highest risk communities, developing future inundation extents of 5-, 10-, 25-, 50-, and 100-year return intervals and projected shorelines for years 2050 and 2075.

Community Planning and Technical Assistance

Project staff will work closely with 14 communities to coordinate with local leaders to complete:

- A community survey, conducted by a local coordinator to gather community input of environmental threats, community priorities and inform short and long-term strategies to address environmental threats;
- A reconnaissance-level engineering assessment to assess immediate mitigation needs, inform a near-term action plan with near-term project development and funding acquisition for imminent actions and additional storm surge modeling *(all are match from ANTHC and DGGS. Project partnership provided by DCRA/Risk MAP);*
- Long-term flood and erosion mitigation project development and planning that leverages baseline data collection ,coastal erosion and flood risk assessment, and coastal flood activities, resulting in an infrastructure protection strategy, and a pipeline of fundable projects for which grant application assistance will be provided (*all are match from ANTHC. Project partnership provided by DCRA/Risk MAP).*

Figure 34: Flooding in the Village of Golovin, 2011

Photo: John Peterson of Golovin

CHAPTER FIVE: DCRA: AN EFFECTIVE COOPERATING TECHNICAL PARTNER

Alaska's constitution calls for an executive branch agency to advise and assist local governments (Article X, Section 14). The duty to serve as the constitutional local government agency is delegated to Commerce pursuant to AS 44.33.020(a)(4).6. Within Commerce, DCRA performs the local government agency's functions.

Consistent with its mission, DCRA has been the designated State Coordinating Agency for the NFIP for more than 30 years. DCRA was directed to serve in this capacity by Alaska Administrative Order No. 46, which took effect on January 24, 1978. Currently, Alaska Administrative Order No. 175 appoints DCRA as the Governor's Designated State Coordinating Agency for the NFIP. Administrative Order No. 175 directs DCRA to assist state agencies in complying with this order through the following land use measures:

- Protecting the state's capital investments by ensuring future state-owned and state-financed construction projects are sited and constructed in a manner that reduces the potential for flood and erosion damage;
- Sighting and constructing state-owned and state-financed projects using FEMA regulations pertaining to construction standards as a guide for flood-prone, mudflow-prone, and flood-related erosion-prone areas;
- Using pertinent portions of the FEMA NFIP regulations, 44 CFR Part 60, as a guide for such construction activities, encouraging a broad and united effort to lessen the risk of flood and erosion losses in connection with state lands and installation and state-financed or supported improvements. Specifically, state agencies directly responsible for building structure construction, and other development including grading, paving, and excavation, shall to the maximum extent possible, preclude the uneconomic, hazardous, or unnecessary use of documented flood plains and erosion areas in connection with such development;
- Considering the potential of flood and erosion hazards. Consideration shall be given to setbacks, flood proofing, building elevation, and erosion control measures in flood and erosion-prone areas;
- Evaluating flood and erosion hazards in connection with lands or properties proposed for disposal and, in order to minimize future state expenditures for protection and disaster relief, shall consider including within all new subdivision proposals and other proposed developments greater than 50 lots or 5 acres, whichever is the lesser, base (100) year flood elevation data, or information on approximate flood risks; and

Taking flood and erosion hazards into account when evaluating plans and permits and encouraging land use approximate to the degree of hazard involved.As the designated State Coordinating Agency for the NFIP, DCRA was also responsible for the implementation of Alaska's Map Mod program. DCRA additionally fulfills Commerce's charge through two State Administrative Orders (231 and 239) "to act as the state coordinating agency to coordinate with the other state and federal agencies to propose long-term

solutions to the ongoing erosion issues in... affected coastal communities..."

DCRA's mission to advise and assist Alaska's local governments, the Division's directive to coordinate with other state and federal entities on behalf of Alaska's local governments regarding erosion hazards, and the Division's historical role in coordinating the NFIP and flood mapping in Alaska make it an effective and appropriate agency to serve as the State Cooperating Technical Partner with FEMA and to coordinate Alaska's Risk MAP Program.

Figure 35: Ice Jam Flooding in Galena, Spring 2013

Photo: Ed Plumb, National Weather Service

CHAPTER SIX: STATE OF ALASKA RISK MAP STRATEGY

In order for Alaska's communities to make informed risk management decisions, a consistent risk-based approach to identifying, assessing and planning for the mitigation of natural hazards is necessary. Recognizing the connection between reliable flood maps and flood damage is essential for protecting life and property in Alaska. This is the central purpose of Risk MAP: to provide communities with flood and other hazard information and tools they can use to enhance their mitigation plans and better protect their citizens. Through more accurate flood maps, risk assessment tools, and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk and becoming more disaster resilient.

Role of the State Risk MAP Coordinator

The State Risk MAP Coordinator is central to the implementation of Alaska's Risk MAP Program. The Alaska Risk MAP Coordinator serves as the intermediary and primary point of contact between Alaska's local governments and FEMA and FEMA's agents for Alaska's Risk MAP Program. Consistent with FEMA's Risk MAP goals, the Alaska CTP Coordinator will collaborate with other state, local, and tribal entities to facilitate mapping partnerships in order to update flood hazard data and maps and to ensure updated information is used in making informed decisions regarding planning, community development, and hazard mitigation.

The Risk MAP Coordinator will support local communities and FEMA Region X by implementing an integrated programmatic strategy to mapping flood hazards, performing risk assessments, informing hazard mitigation plans, acquiring detailed topographic data, and helping communities and tribes take action to become more resilient to natural disasters.

The Alaska Mapping Business Plan

The Alaska Mapping Business Plan: Integrating Mapping, Assessment, and Mitigation Planning comprehensively evaluates the status of Alaska's flood maps, setting priorities for future mapping and risk assessment, and outlining a collaborative relationship with FEMA to fully execute the Risk MAP strategy for the benefit of Alaska's communities, local governments, tribal entities, and residents.

The purpose of the mapping business plan is to provide FEMA with Alaska's strategy for local government participation in the Risk MAP program. During Federal Fiscal Year 2020, DCRA will reach out to other state and federal agencies, private sector organizations, and non-profit entities by inviting them to Risk MAP meetings and activities. The purpose of this outreach is to develop a plan which leads to stronger support of FEMA's mapping and hazard assessment program, and leverages new financial commitments from other entities with vested interests in improving the accuracy of mapping and hazard data collection in Alaska.

The State of Alaska's Risk MAP project prioritization process is discussed in the next chapter, ***Alaska Risk Map Data Acquisition, Analysis and Prioritization of Future Study Needs,*** on page 129.

Key Stakeholders and Subject Matter Experts

The value of Risk MAP to Alaskan communities is that it's not just a mapping project with a beginning and an end. Risk MAP is a process, a continuing, collaborative partnership to help federal, state, tribal, and local community officials, business owners, private citizens and stakeholders make sound floodplain management decisions and take action to reduce risk from floods and other hazards.

Essential to this partnership are key stakeholders and subject matter experts who are engaged and involved in every step of the Risk MAP Process. The Risk MAP Coordinator works throughout the Risk MAP Study with the Risk MAP Project Team. This includes the following team members:

Risk MAP Project Team

- FEMA Region X Project Officer (Risk Analyst)
- FEMA Region X Engineer
- FEMA Region X Floodplain Management Specialist
- FEMA Region X Mitigation Planner
- FEMA Region X Earthquake Program Manager
- STARR Project Manager
- STARR Engineer/Planner
- Regional Service Center Lead
- CERC Staff
- State of Alaska NFIP Coordinator
- State of Alaska Hazard Mitigation Officer
- State of Alaska Mitigation Planner
- State of Alaska Mitigation Grants Manager

In addition to the core Project Team, the State Risk Map Coordinator will notify an additional group of subject matter experts and stakeholders at the beginning of each Risk MAP Project. These subject matter experts and stakeholders may be engaged throughout the Risk MAP Life-Cycle of a project, as relevant.

Subject Matter Experts and Stakeholders

- State Geologist: DNR Division of Geological and Geophysical Surveys
- State Dam Safety Officer: DNR Division of Mining, Land and Water
- State Emergency Manager: MVA Division of Homeland Security and Emergency Management
- DCRA Local Government Specialists in Regional Offices: Anchorage, Bethel, Fairbanks, Kotzebue, Juneau, Nome
- Additional State Risk MAP CTPs: Municipality of Anchorage, Fairbanks North Star Borough, City and Borough of Juneau, Kenai Peninsula Borough
- State Hydrologist: DOT/PF Statewide Environmental Office
- Alaska Silver Jackets Team (there may be some duplication with other stakeholders listed here)
- University of Alaska Fairbanks Scenario Network for Alaska +Arctic Planning (SNAP)
- NOAA Regional Coordinator and National Weather Service
- U.S. Army Corps of Engineers Floodplain Management
- Denali Commission Village Infrastructure Protection Program
- Alaska Native Tribal Health Consortium Center for Environmentally Threatened Communities
- Western Alaska Landscape Conservation Cooperative

Figure 36: Mapping partners that will be engaged during the Risk MAP Life-Cycle.

State Policies and Programs that Benefit from Risk MAP Data and Products

Alaska Arctic Policy Commission

The Alaska Arctic Policy Commission (AAPC) was legislatively by HCR 23 (1 & 2) in April 2012. One of the most important aspects of the AAPC's work is to positively influence federal Arctic policy, strategy and implementation. On January 2015, the AAPC adopted an Implementation Plan which sets forth a vision for Alaska's Arctic future

The Alaska Arctic Policy and Implementation Plan creates a framework of policy and recommended actions that can be built upon and adapted to the emerging reality of the Arctic as a place of opportunity, stewardship and progress. The Implementation Plan's Strategic Line of Effort #3 – Support Healthy Communities, Recommendation 3D is to, *"Anticipate, evaluate and respond to risks from climate change related to land erosion and deterioration of community infrastructure and services and support community efforts to adapt and relocate when necessary."*

The Implementation Plan recommends for execution of this policy,

> ***"DCCED's Risk MAP program is a good start to identifying and prioritizing risk, though as a FEMA-funded project it is very specific in the communities it can include."***

The first recommended legislative action is to,

> ***"Expand DCCED Risk MAP program and partner with communities who are ready to take action."***

The second recommended legislative action is to,

> ***"Conduct high resolution mapping of communities and surrounding landscapes for the development and deployment of evacuation plans in areas where river and coastal flooding are regular occurrences or are likely to occur in coming decades. Prioritize communities currently threatened."***

Alaska Arctic Policy Act

The Alaska Arctic Policy Act was signed into law on August 9, 2015 as Chapter 10 SLA 15 (Alaska Statute 44.99.105). The act is designed to guide the state's initiatives and inform U.S. domestic and international Arctic policy in order to best serve the interests of Alaskans and the nation. Section 44.99.105(b) of the act states:

"*(b) It is important to the state, as it relates to the Arctic, to support the strategic recommendations of the implementation plan developed by the Alaska Arctic Policy Commission and to encourage consideration of recommendations developed by the Alaska Arctic Policy Commission."*

In addition to supporting the recommendations outlined above through the AAPC, the Act identifies policies to,

> *"sustain current, and develop new, community, response, and resource-related infrastructure"* (AS 44.99.105(a)(3)(C)),

and to

> *"sustain current, and develop new, approaches for responding to a changing climate, and adapt to the challenges of coastal erosion, permafrost melt, and ocean acidification" (AS 44.99.105(a)(1)(D)).*

Local Governance

Alaska's Constitution confers broad authority on its local governments. Alaska State Law requires that planning, platting and land use regulation is carried out by Alaska's incorporated municipalities: home rule, first and second class boroughs, unified municipalities, and first class and home rule cities outside of boroughs. Local decision-Making and Planning Risk MAP Data and products can enhance planning and decision making at the local level by providing quality data from which wise decisions can be made.

Alaska Climate Change Impact Mitigation Program

The Alaska Climate Change Impact Mitigation Program (ACCIMP) was established by Alaska's Twenty-Fifth Legislature to provide technical assistance and funding to communities imminently threatened by climate-related natural hazards such as erosion, flooding, storm surge, and thawing permafrost. The intent of the program is to help impacted communities develop a planned approach to shoreline protection, building relocation and/or eventual relocation of the village.

The ACCIMP is implemented through a two-step process:

1. **Hazard Impact Assessments** are conducted to identify and define the hazard impacts in the community, to assess how those hazards impact the community, and to develop recommendations for how the community might best mitigate those hazard impacts; and
2. **Community Planning Grants** allow communities to carry out one or more or the recommendations from the Hazard Impact Assessment. Results of community planning efforts will provide a common blueprint for investment of federal assistance and state and local resources as well.

It is unlikely that the ACCIMP will receive funding in the near future due to the State's fiscal situation. However, the new Alaska Native village focus of Risk MAP can accomplish similar results to the ACCIMP by helping communities begin the decision-making process for the adaptation planning process. Risk MAP's hazard studies and analysis and risk assessment tools can increase local understanding of risk, and enhance local decision-making to take action against risk. Risk MAP data and tools can inform local hazard mitigation plans as well as community comprehensive plans and resilience/adaptation plans.

Alaska Community Coastal Protection Project

The Alaska Community Coastal Protection Project focused on three of the most imminently threatened villages in Western Alaska: the communities of Kivalina, Shaktoolik and Shishmaref. The objective of the project was to increase community resilience and sustainability to the impacts of natural hazards threatening these communities while protecting the natural coastal environment. The project was based on the premise that careful planning, agency collaboration and strong community leadership are essential to successfully addressing the needs of imperiled communities.

Community resilience has been increased through three measures:

- **Interagency Collaborative Support Structure:** Using a collaborative model similar to the Newtok Planning Group, DCRA established interagency planning work groups for the three communities. Through these working groups, collaborative organizational structures were developed to focus the combined capabilities of local, regional, state, and federal stakeholders on accomplishing the recommended actions for each community, whether it is shoreline protection, elevation of community structures, migration from shorelines, relocation, or a combination of these actions. These planning work groups serve as a vehicle for coordinating resources and technical assistance from state and federal agencies, regional organizations and local governments on a community-specific basis.
- **Local Capacity Building:** A full-time community coordinator was established in each community to work with project staff, representatives of the inter-agency working group, and the contractor, as well as serve as an advocate for funding through grants and other means to implement needed evaluations and action plans. A key role of the community coordinators has been to ensure community representation at the interagency working group meetings. While the grant funding for these positions has been completed, the Denali Commission has since provided funding for the community coordinators to continue this work.
- **Comprehensive Strategic Management Plan:** A contractor was hired to develop a strategic management plan for each community which provides the "blueprint" for how the community and agencies will proceed over the next five years to accomplish the recommended actions the community has decided to take, such as shoreline protection, elevation of community structures, migration from shorelines, relocation, or a combination of these actions. The contractor worked with project staff and the local project coordinators, and attended inter-agency meetings to develop the strategic management plans.

The strategic management planning process would be enhanced by the use of Risk MAP data and products as these tools would benefit the community decision-making process regarding adaptation project to address climate impacts as well as long-term planning.

State Grant Programs That Can Support Risk MAP Objectives or be linked to Risk MAP Goals

The ACCIMP and the Alaska Community Coastal Protection Project, described above, are grant programs administered by the State which support the following Risk MAP objectives:

- Increase public awareness of risk from natural hazards and establish a baseline of local knowledge and understanding of risk management concepts.
- Ensure that a measurable increase of the public's awareness and understanding of risk results in a measurable reduction of current and future vulnerability to flooding.
- Lead and support states, local and tribal communities to effectively engage in risk-based mitigation planning resulting in sustainable actions to reduce or eliminate risks to life and property from hazards.

Resilience Partnerships

The development of collaborative partnerships among resilience associates is a cornerstone of Risk MAP. These partnerships are important throughout the Risk MAP process, from Discovery to Resilience. The relationships developed through these partnerships can provide a more in-depth understanding of natural hazard risk and more robust and effective ways to address community needs**.** The resilience partnerships in which DCRA has engaged have been extremely important to increasing resilience in Alaska communities. These partnerships are discussed below.

Alaska Silver Jackets Team

The State of Alaska Risk MAP Coordinator is a member of the Alaska Silver Jackets (ASJ) Executive Steering Committee. Nationally, the Silver Jackets Program is an initiative of the U.S. Army Corps of Engineers (USACE). The objective of the Silver Jackets National Program is to lead collaborative, comprehensive and sustainable silver jackets to improve safety and reduce flood damages to our country. The program overarching goal is to integrate and synchronize the ongoing, diverse flood risk and authorities of FEMA, other Federal agencies, state organizations, and regional and local agencies. The project will encompass a broad strategy of interagency team development, policy studies, risk communication measures development, legislative initiatives professional papers and other means to accomplish this objective.

The Alaska Silver Jackets (ASJ) team of multi-agency and interdisciplinary volunteers work together toward its shared long view vision, to be a catalyst in developing wise, data supported, comprehensive, and sustainable solutions to all natural hazard issues. ASJ is a data-focused, voluntary, inter-agency, all natural hazard mitigation team of multi-professional / technical staff working together to protect life, property, and resources; with the motto, ***"Working Together for Alaska"***

Currently, the ASJ Executive Steering Committee volunteer agencies include:

- Alaska Division of Community and Regional Affairs
- Alaska Division of Geological and Geophysical Surveys
- Alaska Division of Homeland Security & Emergency Management
- U.S. Army Corps of Engineers
- National Oceanic and Atmospheric Administration, National Weather Service
- U.S. Geological Survey
- Federal Emergency Management Agency

Additional Agencies that voluntarily participate include but are not limited to:

- University of Alaska
- Denali Commission
- U.S. Department of Housing and Urban Development
- Alaska Native Tribal Health Consortium
- Alaska Department of Transportation and Public Facilities

Participation in the Risk MAP process by Silver Jackets team members greatly increases the ability to avoid duplication of efforts, especially with tasks and projects such as data collection. By incorporating these stakeholders into the Risk MAP process, there is a better understanding of the flood and other hazard risk in a community and what resources are available to assist the local governments in addressing that risk.

Denali Commission Village Infrastructure Protection Program

The Denali Commission is an independent federal agency based on an innovative federal-state partnership designed to designed to provide critical utilities, infrastructure, and economic support throughout Alaska in the most cost-effective manner possible.

On September 2, 2015, the President of the United States announced an initiative to increase resilience in Alaskan communities, stating that "the Denali Commission will play a lead coordination role for Federal, State, and Tribal resources to assist communities in developing and implementing both short and long-term solutions to address the impacts of … coastal erosion, flooding, and permafrost degradation." In order to fulfill this role as lead federal coordinating agency, the commission established the Village Infrastructure Protection (VIP) Program. The VIP program is dedicated to assisting rural Alaska communities that are threatened by erosion, flooding and permafrost degradation. The program goal is to mitigate the impact of these threats with respect to safety, health and the protection of infrastructure.

The partnership between DCRA and the Commission makes sense, because DCRA has been a leader for many years in providing technical assistance to rural Alaska communities threatened by coastal/riverine erosion, flooding and permafrost degradation through its management of the Alaska Climate Change Impact Mitigation Program, Alaska Risk MAP Program, and participation on the Governor's Subcabinet on Climate Change - Immediate Action Workgroup.

This relationship will be of direct benefit to the Alaska Risk MAP Program through the following efforts:

1. **Statewide Threat Assessment**: as discussed in the section on ***"Assistance to Imminently-Threatened Alaska Native Villages"*** (page 91), the Denali Commission engaged the U.S. Army Corps of Engineers and the University of Alaska Fairbanks in a Statewide Threat Assessment Project to collect additional flood, permafrost and infrastructure data for rural Alaskan communities, analyze this data, and then develop a methodology that assigns a risk index for each threat for individual communities, as well as an overall aggregate risk index for all three threats when considered together. These indices can then be used to determine which communities should logically be added to the current GAO list of 31 imminently-threatened communities impacted by permafrost degradation, erosion and flooding. The Threat Assessment was completed in November 2019 and is available online at https://secureservercdn.net/198.71.233.87/02e.11d.myftpupload.com/wp-content/uploads/2019/11/Statewide-Threat-Assessment-Final-Report-20-November-2019.pdf

   The results of the Threat Assessment have been used to identify the State of Alaska's Risk MAP priorities for 2020-2022, focusing on Alaska Native villages most vulnerable to flood, erosion and thawing permafrost threats.

2. **Alaska Risk MAP-VIP Collaboration:** because the VIP Program focuses on the same communities as the Alaska Risk MAP Alaska Native Village Initiative, a clear process can be developed to address the needs of these communities:
   a. The communities will be prioritized by level of threat using the Denali Commission's Statewide Threat Assessment.
   b. Risk MAP Discovery will be initiated with one or two of the most threatened communities every other year. The Risk MAP process will guide each community on the critical steps of identifying and understanding risk, assessing risk and making decisions to respond to that risk. As mitigation actions are identified, increased collaboration can take place to align VIP and Risk MAP projects.

Alaska Native Tribal Health Consortium Center for Environmentally Threatened Communities

The Alaska Native Tribal Health Consortium Center for Environmentally Threatened Communities (ANTHC/CETC) supports communities across Alaska that are experiencing infrastructure impacts associated with flooding, erosion, and permafrost degradation. ANTHC/CETC works closely with communities to understand their needs and priorities, identify technical resources that support them, and with grant writing to secure funding for community-driven solutions. The ANTHC/CETC has reached out to DCRA to partner with them to provide planning assistance and to facilitate interagency meetings for a number of communities, including Chefornak, Kotlik, Napakiak and Tuntutuliak. The Center is funded by grants from the Denali Commission and the Climate Justice Resilience Fund.

Arctic Executive Steering Committee - Community Resilience Working Group

The State of Alaska Risk MAP Coordinator is a member of the Community Resilience Working Group, a working group under the White House Arctic Executive Steering Committee.

The Arctic Executive Steering Committee (AESC), established by Executive Order in January, 2015, approved a Department of the Interior proposal to examine opportunities for improving federal actions that address the imminent threat of coastal erosion and flooding impacting Alaskan Arctic coastal communities. The AESC formed an interagency Coastal Erosion Working Group (CEWG) *[Renamed in spring 2016 as Community Resilience Working Group (CRWG) at request of AK Native groups]* to coordinate with the State of Alaska, local governments, Tribal governments, and Alaska Native communities to develop recommendations for the AESC to consider. From the AESC meeting's Summary of Conclusions:

> *The Department of Interior will lead a task force with the Army Corps of Engineers, the Departments of Transportation and Housing and Urban Development, Council on Environmental Quality, and the Federal Emergency Management Agency, in coordination with the State of Alaska and Alaska Native communities, to create recommendations to address the imminent threat of coastal erosion and flooding to several high-risk Alaskan coastal communities.*

The CRWG has engaged experts and potential partners throughout the region, and their informed perspectives helped develop a set of recommendations the working group intends to accomplish.

Adaptive Village Relocation Framework for Alaska Native Villages

One of the recommendations of this partnership is to develop a collaborative interagency relocation framework to assist Alaska Native village with relocation. The goals of the framework are to:

- Provide guidance and best practices on the data and analysis necessary to make sound decisions about relocation versus protection-in-place or migration.
- Identify a step-by-step roadmap that both communities and agencies can take, once a community has decided to relocate, that will result in a more efficient relocation process.
- Provide recommendations for changes and improvements that will streamline the use of existing federal and state resources for relocation efforts.

The State of Alaska Risk MAP Coordinator is developing this framework with several federal agency partners, led by the Department of the Interior.

Western Alaska Partnership

The State of Alaska Risk MAP Coordinator is a Co-Chair of the Western Alaska Partnership (WAP). The WAP (formerly the Western Alaska Landscape Conservation Cooperative) focuses on over 750 miles of rapidly changing terrain, including the permafrost-dominated tundra of the Seward Peninsula, complex river delta systems of the Yukon and Kuskokwim rivers, abundant volcanoes of the Alaska Peninsula, and transitional forests of permafrost-free Kodiak Island.

The WAP's mission is to bring partners together to coordinate, share, and develop applied science that can be used to inform conservation. The partnership promotes coordination, dissemination, and development of applied science to inform landscape level conservation, including terrestrial-marine linkages, in the face of landscape scale stressors, focusing on climate change.

The WAP Steering Committee consists of government agencies, tribes and tribal organizations, non-government organizations, universities, and other organizations or government entities with an interest in conservation in western Alaska. The WAP Steering Committee governs the activities of the WAP.

The WALCC Steering Committee has identified the following study areas:

- The Yukon-Delta Geography was selected as our focal area approach to provide adaptation strategies and recommendations ("Adaptation Planning") within the WALCC.
- Species shifts and nearshore ice and river ice were selected topics to pursue to advance our ability to address coastal system topics in western Alaska.
- The most important questions to pursue if we have project funding for the above topics include:
    - Species Shifts – looking at links and relationships among trophic levels and drivers, and need for flexible subsistence/harvest management (including invasive species).
    - Sea Ice and Nearshore Ice & River Ice – safety and travel, forecasting – make sure to add new questions to tie back to erosion/flooding and species shifts & subsistence (in addition to questions that are already there).

Western Alaska Coastal Resilience Workshops

In 2016, three of Alaska's LCCs (Western Alaska, Aleutian Bering Sea Islands and Arctic) and the Aleutian Pribilof Islands Association worked with a number of partners on a series of four workshops ***Promoting Coastal Resilience & Adaptation in Arctic Alaska***. The workshops were held in Nome, Kotzebue, Unalaska and King Salmon. At the workshops, tribal leaders, resource managers, community planners, and scientists explored strategies to adapt to these unprecedented changes along Alaska's coasts.

Adapt Alaska Collaborative

The Adapt Alaska Collaborative developed in order to maintain the momentum of the workshops ***Promoting Coastal Resilience & Adaptation in Arctic Alaska*** discussed above. The intent is to broaden the partnerships started through the coastal resilience workshops and extend the work to Alaska as a whole. Some goals of this effort are to:

- Continue the capacity-building conversations – the back and forth dialogue between agencies, non-profits, researchers, residents and communities.
- Continue to develop and share information about the impacts of climate change, and the practical strategies to help Alaskans respond to these changes.
- Take full advantage of resilience work to date, both information collected and connections formed between communities, agencies, researchers.
- Bring in new capacity, new partners (e.g., Lieutenant Governor's office).
- Continue to develop the Adapt Alaska website.

Three working groups have been formed under the Adapt Alaska Collaborative:

- **Coordination/Communication/Outreach Work Group,** whose goals is to keep the 'movement' alive and moving forward; no other initiative has the breadth of participants, knowledge or capacity for widespread action in these areas.
- **Resilience Planning Work Group**, whose goal is to improve the value and reduce the burden of State, Federal and other funding agency planning requirements for rural communities working toward adaptation and resilience implementation actions.
- **Integrated Knowledge, Information and Research Work Group**, whose goal is to improve the three-way co-production of useful environmental information, aiming to better integrate:
    - locally based, "indigenous knowledge"
    - outside expertise, "western science; work by "scientists/researchers"
    - needs of consumers of environmental information

The Alaska Risk MAP Coordinator belongs to the Resilience Planning Work Group and Integrated Knowledge, Information and Research Work Group. Information from both of these efforts can enhance work the Alaska Risk MAP Coordinator is doing in Alaskan communities by incorporating leading-edge concepts in integrated knowledge and resilience planning into the Risk MAP process.

Adapt Y-K Delta Partnership

The Adapt Y-K Delta effort was funded by the Western Alaska Landscape Conservation Cooperative with support from the Alaska Silver Jackets Team. The effort was regionally-focused, driven by a steering committee of 20 representatives from throughout Alaska's Yukon-Kuskokwim Delta. During two steering committee workshops held in Bethel, the steering committee identified three key regional issues being threatened by a changing climate: ***Community Infrastructure*** threatened by erosion flooding and permafrost degradation, ***Subsistence Activities*** impacted by shifting seasons, and ***Trails and Transportation Corridors*** affected by thawing permafrost and lack of river ice.

The two steering committee workshops informed the development of an action plan that included a list of projects focusing on adapting to changing conditions and immediate needs. The plan was rolled out during a Comprehensive Economic Development Strategy workshop held in Bethel in April 2019.

The Alaska Risk Map Coordinator served on the support team with the US Fish and Wildlife Service, US Army Corps of Engineers, Alaska Sea Grant, and the project consultants - Agnew::Beck Consulting and Nautilus Impact Investing.

Figure 37: Communities of the Yukon-Kuskokwim Delta (US Fish and Wildlife Service)

State of Alaska Risk MAP Coordinator Meeting Participation

Roles and Responsibilities for all Meetings

Purpose: Help facilitate and organize the meeting, engage with stakeholders, attend the meeting, and provide set-up support. Bring any materials that are shipped to the Risk MAP Coordinator office. Help identify note takers to support the meeting summary-official note takers will be assigned ahead of the meeting.

Pre-Meeting Coordination

- Ensure that meeting materials are available at the location, either through coordination with your office or the local government.
- Set expectations, background and purpose for the meeting.
- Work the with community to identify who should attend the meeting.
- Participate in pre-meeting calls.
- Review preliminary and effective Risk MAP products.
- Provide feedback on agenda and outreach materials.
- Answer questions from participants and potential participants.
- Coordination expected of the Risk MAP Coordinator may be reliant on the delivery of mapping products and regulatory milestones.

Post-Meeting Coordination

- Ensure participants receive information requested and needed.
- Share follow-up needs with FEMA.

Ongoing Meeting Coordination

- Continue coordination with communities within the State to determine community floodplain mapping needs.
- Expand the conversation to multi-hazard and look at mitigation interests, data gaps, and needs.
- Ongoing coordination task list is not exhaustive. Additional tasks could include coordination with CTPs, Silver Jackets, NHMP and mitigation funding cycles, and local communities.
- Quarterly reporting that communicates the story (quality over quantity) of engagement and progress made.

Ongoing Coordination Tasks (outside of Risk MAP Meetings)

Natural Hazard Mitigation Plan Alignment

Task 1

Coordinate with Federal, State, and local partners to align the development and timeline of CTP grants,

local projects, and NHMP Plans.

Engagement Frequency

Touch base with communities at Steering Committee meetings.

**This is dependent of the availability of NHMP funding in place. A quantitative performance metric is needed to identify when a community is interested in participating in Risk MAP.*

Task 2: Coordinate with Federal, State, and local partners to align the timing of Resilience with NHMP development or post adoption.

Engagement Frequency: Once the Resilience project area and timeline for meeting is identified, support local conversations and coordination efforts. This needs to occur 6 months before the Resilience Meeting is planned to occur.

Flood Insurance Rate Map Outreach

Task: Engage with communities that have FIRMs to determine their desire and need for updates and supplemental multi-hazard products to inform future scoping.

Engagement Frequency: Touching base with communities in coordination with the annual State Risk MAP Strategy.

LiDAR Collection

Task: Engage with Federal, State, and local partners to determine needs and location for future LiDAR collection to inform future scoping.

Engagement Frequency: Touch base with primary State partners quarterly and with communities requesting LiDAR, as needed.

Risk MAP Website

Task 2: Update State Risk MAP website with current products, timelines, etc.

**This can include training opportunities, funding opportunities and technical support opportunities, how a community can address unmet needs through Risk MAP resources, Silver jackets projects and other mitigation project coordination opportunities.*

Engagement Frequency: At minimum, update quarterly and after every Risk MAP meeting.

Discovery

Pre-Discovery Coordination

Purpose: A watershed is selected for Discovery based on prioritization from the ***Alaska Prioritization and Future Studies Sequencing Decision Support System*** and the coordinated input by FEMA and the State. Before Discovery begins, FEMA, FEMA's mapping contractor STARR (Strategic Alliance for Risk Reduction) and the State will work together to collect data regarding local flood risks, other hazards, and other community data.

State Risk MAP Coordinator Role:

- Before funding is obligated, coordinate with communities to determine their interest in Risk MAP.
- Determine the community's primary needs and concerns.
- When funding is obligated by FEMA, work with the communities and FEMA's Community Engagement and Risk Communication (CERC) contractor to identify meeting logistics.
- Send out meeting invites, agenda, slide deck, and related materials.
- Gather details as needed for CERC.
- Identify local leaders.

Engagement Timeline

Before funding is obligated: Identify interest 1-year before meeting. Alert the Region when a community is unresponsive to strategies how if and if proceed. The engagement strategy must be developed before CERC can be funded to support.

Discovery Meeting

Purpose: The Discovery Meeting is the first in-person meeting that the Project Team has with community officials, affected Tribes, and other key stakeholders across the study area. It is important for the Project Team to understand as much as possible about the watershed's flood hazards and risk prior to the Discovery Meeting. The Discovery Meeting is a working meeting, so it is important that attendees expect to participate in discussions about their flood risk. The meeting brings the community and other stakeholders in the watershed together. The Discovery Meeting is focused on introducing or enhancing watershed risk concepts and discussing the flooding hazards in the watershed and their associated flood risk.

State Risk MAP Coordinator Role:

- Support communities to identify priority areas for new floodplain mapping studies, and other multi-hazard maps and risk assessments.

Engagement Timeline

Day of meeting and immediately following the meeting to support follow-up requests.

Ongoing Discovery Coordination

State Risk MAP Coordinator Role

- Continue coordination with communities within the State to determine community floodplain mapping needs.
- Expand the conversation to multi-hazard and look at mitigation interests, data gaps, and needs.
- Support communities to identify priority areas for new floodplain mapping studies, and other multi-hazard maps and risk assessments.

Engagement Timeline

1-month after the meeting, ensure that all follow-up requests have been addressed. Follow-up quarterly until scoping begins.

Scoping Meetings and Levee Meetings

Scoping Meeting Coordination

Purpose: If a flood risk project is appropriate for the watershed and the project involves flood engineering analysis, the project team will conduct additional coordination with the impacted communities to discuss anticipated changes to the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS).

State Risk MAP Coordinator Role

- Serve as an advocate to refine what was heard during the Discovery phase to ensure that scoping moves forward appropriately regarding accurate quantities, appropriate methodologies, available data, potential partners, and local contributors for new floodplain hazard analysis.
- Scoping is dependent on LiDAR and the Risk MAP Coordinator can help identify gaps in data to outline priority areas, identify LiDAR footprints and needs.
- Share the Mass Zone A data with local communities with a commenting period to support local feedback and engagement on the assessment. Compile feedback and provide to the Region.
- The Risk MAP Coordinator will be available to contact and communicate with communities, explain the purpose of the meeting, provide follow-up, and act as the advocate for communities to ensure that their priorities are moving forward.

Engagement Timeline

Begins 3-6 months after Discovery and 2-3 months before finalizing project planning.

Levee Meeting (including Local Levee Participation Team Meetings)

State Risk MAP Coordinator Role

- Support the Region in communicating levee policies and processes with communities prior to and during the LLPT phase in order to determine appropriate mapping processes to address non-accredited levees and embankment features.
- The Risk MAP Coordinator will be available to contact and communicate with communities, explain the purpose of the meeting, provide follow-up, and act as the advocate for communities to ensure that their priorities are moving forward.

Engagement Timeline
Varies

Flood Risk Review Meeting

Pre-Flood Risk Review Meeting Coordination

State Risk MAP Coordinator Role

- Explain to the community the connection between floodplain mapping needs expressed at the Discovery Meeting, the priorities identified at the Scooping Meeting, and the draft map that will be presented at the Flood Risk Review (FRR) Meeting.
- Identify local staff turnover between the Discovery Meeting and CCO meeting.
- Help establish expectations for the draft product.
- Facilitate conversations and direct question to the FEMA engineer about the draft map and the underlining assumptions in the modeling.
- Coordinate with the community, FEMA, and STARR to determine the meeting logistics.
- Send out the meeting invitation, agenda, and slide deck.

Engagement Timeline
Approximately 2-3 months before the expected work map release.

Flood Risk Review Meeting

Purpose: The Flood Risk Review Meeting is a technical/engineering-focused meeting giving community officials the opportunity to review the draft Risk MAP products included as part of the Risk MAP project scope. This type of meeting may also be important for Risk MAP projects that include significant changes in the identified flood risk. The Flood Risk Review Meeting allows the project team to highlight the flood risk associated with the changes, and gives communities the opportunity to review the results and begin communicating that risk to impacted residents and businesses.

The Flood Risk Review Meeting is a recommended, technical/engineering-focused meeting that gives community officials the opportunity to review the draft Risk Mapping Assessment and Planning (Risk MAP) products. The intent of this meeting is to get the communities to get a first glimpse of what the results look like, provide them enough information so they know what went into the effort (and what didn't), prepare for any political challenges that comes with the better understanding of flood risk, and to provide feedback on anything that does not look right. This is the time where it is ideal to get detailed comments from the community as we have not gone through the high cost efforts of quality review checks and getting it into the very specific preliminary map format. A detailed explanation of what has been done and showing flexibility in the approach, if the community can provide educated feedback on how it could be improved, helps to establish technical credibility as one moves forward through the process.

State Risk MAP Coordinator Role

- Gain feedback from the community leaders about the draft map.
- Ensure the leaders understand the technical methodologies, assumptions, and inputs to derive the draft floodplain.
- Obtain buy-in and determine where changes are needed.

Engagement Timeline
Day-of meeting and address any follow-up requests.

Consultation Coordination Officer (CCO) Meetings
Purpose: The CCO Meeting is held by the project team for the local officials in communities receiving new or updated regulatory products such as the FIRM and Flood Insurance Study (FIS) report. The purpose of the CCO Meeting is to present the preliminary FIRM panels and data to stakeholders, including community officials, before presenting the information to the public.

After the release of preliminary FIRMs and FIS reports, FEMA holds meetings to present them first to community officials (Consultation Coordination Officer or CCO Meeting). Any changes in flood risk will be explained and participants will have an opportunity to provide feedback on the products. This is also the meeting where public outreach needs are discussed.

Pre-CCO Meeting Coordination

State Risk MAP Coordinator Role
- Continue to coordinate with the community to answer questions about the floodplain modeling, regulatory process, and their goals for the CCO Meeting.
- Engage with the community at the time of the map release.
- After the preliminary maps are released, coordinate with CERC and communities to support meeting coordination and determine CCO Meeting logistics.
- Send out the meeting agenda, slide deck, and invitations.
- Gather details for CERC as needed.

Engagement Timeline
Check-in with communities approximately 2 weeks after the release of preliminary products. This applies if a revised prelim is needed.

CCO Meeting
The CCO Meeting is required by 44 CFR 66.5 (f):
(f) The community shall be informed in writing of any intended modification to the community's final flood elevation determinations or the development of new elevations in additional areas of the community as a result of a new study or restudy. Such information to the community will include the data set forth in paragraph (e) of this section. At the discretion of the Regional Administrator in each FEMA Regional Office, a meeting may be held to accomplish this requirement.

State Risk MAP Coordinator Role
- Discuss how the community wants to share and communicate the new map to the general public as well as provide recommendations about targeted outreach for impacted property owners.

Engagement Timeline
Day-of meeting and address any follow-up requests.

Public Open House Meeting

Purpose: Once the preliminary maps are released, the CCO meeting is held, and the appeal period process is started, there is often a request for a public meeting. Most communities request and FEMA likes to support a public open house to help get the word out about the changes to the flood maps and to provide an opportunity for the community to get their questions answered on whether they are in a floodplain, what the flood insurance requirements are, and what the regulations are for floodplain development in these areas.

The format of the public meeting is an open house with a 15 minute simplified overview of the NFIP, the study, and the study process. The open house format is explained and an explanation is given of what questions can be answered at what tables.

Pre-Public Open House Meeting Coordination

State Risk MAP Coordinator Role

- Coordinate with communities to determine if a Public Meeting is needed.
- Help identify a local point of contact or representative to take ownership at the meeting.
- Coordinate with communities and CERC to determine meeting logistics.
- The Risk MAP Coordinator can encourage local staff participation, bring in multi-hazard subject matter experts to the meeting (including the State NFIP Coordinator), and through leveraging relationships with local staff, identify how public engagement has been successful in communities and bring those elements to the Public Meeting.
- Coordinate with FEMA, STARR, and State agencies on the slide deck.
- Sent out meeting invitations.

Engagement Timeline

Check-in with communities approximately 2 weeks after the release of preliminary products. This applies if a revised prelim is needed.

Public Open House Meeting

State Risk MAP Coordinator Role

- Communicate how/why communities have been prioritized for new floodplain mapping based upon criteria developed by the Risk MAP Coordinator program.

Resilience Workshop

Purpose: A Resilience Workshop is an in-person meeting led by FEMA and the Risk MAP Project Team. The goal of the meeting is to help communities understand the results of the risk assessment products and to develop resilience focused strategies using the new data and resources. During this meeting FEMA, State and Local officials engage with the mapping partners to identify the flood risks through the use of the Risk MAP Products Suite, providing a new perspective and understanding of flood risk within their community.

The Resilience Meeting phase of the Risk MAP Process consists of 2-3 separate meetings:

- Elected Officials Briefing
- Tribal Only Briefing

- Community Participants Resilience Workshop

Goals of the Workshop:

- To get federal, state, and local stakeholders together to discuss feasible strategies to reduce risk
- To achieve a community-level review of mitigation strategies from the Hazard Mitigation Plan and Areas of Mitigation Interest from the Risk Report
- To develop a community-specific list of feasible mitigation and risk-reduction strategies

Pre-Resilience Workshop Coordination

Purpose: Prior coordination for the Resilience Workshop is key in order to assign roles for the workshop and allow key facilitator so to do any necessary research and preparation before the meeting.

State Risk MAP Coordinator Role:

- Coordinate with communities to determine their interest in a Resilience Workshop.
- Identify themes/topics and goals of the workshop to inform SMEs who need to be involved in the planning.
- Coordinate with the community, CERC, and SMEs to determine the workshop logistics.
- Send out meeting invitations, agenda, and related materials.
- Gather details as needed for CERC.

Engagement Timeline:

Approximately 1-year before the workshop. The engagement strategy must be developed before CERC is funded to support. It is ideal to have 6-months to plan for a Workshop.

Resilience Workshop

State Risk MAP Coordinator Role:

- Align new hazard mapping and data with local planning processes.
- Identify resources like training, technical support, and funding to advance local mitigation strategies into action.

Engagement Timeline:

Day of meeting and immediately following the meeting to support follow-up requests.

Post-Resilience Workshop Coordination

Purpose: Mitigation Strategies developed prior to the Resilience Workshop are revised after the Workshop to reflect community priorities. These strategies are first developed by the FEMA Mitigation Planners and Risk Analysts with input from the State Risk MAP coordinator and Risk MAP Project Team.

State Risk MAP Coordinator Role:

- Coordinate with communities to follow-up on action items identified during the workshop.
- Ensure the requested resources are provided in a timely manner.

Engagement Timeline:

To begin within 1-month of the workshop in order to meet long-term meetings. Post-Resilience coordination to occur, at minimum, quarterly.

CHAPTER SEVEN: ALASKA RISK MAP DATA ACQUISITION, ANALYSIS AND PRIORITIZATION OF FUTURE STUDY NEEDS

In order to better align the goals and vision of the State of Alaska's Risk MAP Program with the goals and vision of FEMA's Risk MAP Program, DCRA established the FY2010 task of acquiring relevant mapping data, analyzing that data, and prioritizing the State of Alaska's future study needs.

To accomplish this, state agencies and local communities were coordinated with to obtain information and data necessary for the prioritization of mapping needs. A consulting firm, URS, Inc., was hired to carry out this process. The process of data acquisition, analysis, and prioritization of future study needs is discussed in the sections that follow.

Alaska Mapping Data

The first step in the development of a tool to prioritize Alaska's future study needs is the collection of the appropriate data. State, Federal, regional, local and private entities were contacted to obtain information and data necessary for the prioritization of mapping needs in Alaskan communities participating in the NFIP. The information collected includes previously unidentified needs, significant climatological changes, planned future development, available topographic data, and available digital data depicting the built environment that are necessary for flood risk assessments. Depending on the nature of the information, the collected information was catalogued within an Excel Workbook, *AK-Data_Summary.xlxs*, or an ESRI ArcGIS geodatabase.

State and Local Data

The Alaska Mapping Business Plan recognizes 163 incorporated municipalities of which only 32 participate in the NFIP. Since the current Risk MAP focus is to update flood maps, data collection, analysis and prioritization of mapping needs focuses on NFIP-participating communities. A variety of state and local sources were utilized to acquire needed data.

Community Specific Data Collection

This effort focused on fulfilling the Mapping Business Plan's stated purpose and objectives identified in "Future DCRA Risk MAP Business Plan (MBP) Goals, Task 1B:

- Compile and update data on flood and other hazards
- Determine community specific previously unidentified needs
- Determine climatological changes and unidentified impacts
- Identify future planned development which could impact floodplains
- Identify the availability of newly acquired community specific topographic data
- Identify built environment dataset availability and quality
- Determine mitigation plan quality

The data collection and analysis effort entailed contacting State, Federal and local governments participating in the NFIP along with private entities to gather required data to fill the MBP data gaps. For the most part, community representatives willingly and enthusiastically supplied needed information viewing their involvement as having a two-fold benefit – the opportunity to potentially receive funding while simultaneously improving their ability to fulfill their floodplain management responsibilities.

The project included developing individual NFIP participant questionnaires to assess data gaps addressed in the first MBP Goal and its associated Task 1B. The completed questionnaires will provide essential data to support MBP updates and/or inclusion within the plan.

A review of the questionnaire responses reveals that planning, zoning, geographic information systems (GIS), topographic data availability, and community resource capability or capacity is directly related to the community size, affected population, rural location, and hazard risk. The smaller, more rural communities have severely limited capacity to develop or regulate building construction. However, most all communities do guide land-use to ensure new construction does not occur within known hazard zones. The completed questionnaires demonstrate these building code or land-use regulation and enforcement inconsistencies.

It is imperative to the majority of the participating communities that new flood hazard assessments be accomplished to obtain up-to-date flood hazard maps. Their maps are 20 to 60 years old, topography, development, and populations have changed along with associated infrastructure improvements. Consequently the current flood maps do not reflect current conditions and associated hazard risks. Most of these communities rely on historical flood impact knowledge to manage their floodplain because their paper maps no longer adequately identify impact areas. Digitized maps will not make a difference for rural communities with limited technological capabilities, because they cannot afford GIS, staff to manipulate the information, or in some cases the capability to contract this service out.

Additionally, a need was identified for a mechanism to re-adjust ongoing flood map updates to incorporate newly available data that would in some cases drastically change the in-progress map's impact areas, especially as the schedules for these flood map updates span multiple years. For example, the following is an excerpt from the Fairbanks North Star Borough questionnaire response:

> *"The current restudy effort was started in 2006 and is one of FEMAs last MAP Mod projects. Only a portion of the FIRM is being restudied and will be digital upon final adoption. FNSB successfully appealed certain elements of the revision upon review of the initial drafts first released in June of 2009.*
> *The successful appeal was possible in large part due to updated hydrology gathered by the Alaska Railroad in their Conditional Letter of Map Revision (CLOMR) application associated with their proposed new bridge crossing of the Tanana River."*
>
> *The [Alaska Railroad] ARRC CLOMR process uncovered previous mapping shortfalls on the part*

of the FEMA mapping contractor which has delayed finalizing the FIRM updates. The CLOMR application essentially showed how the model used by FEMA in their mapping was flawed. As well, FEMA underwent a contractor change-over, which has further delayed release of the new DFIRMS. Additionally, FEMA headquarters made a "levee policy" change nationwide, which has also adversely affected the timely adoption of the DFIRMs.

In the meantime, [Fairbanks North Star Borough] FNSB has since acquired new LIDAR (very accurate with 2' contours which includes the Boroughs unnumbered "A Zones") from the Corps of Engineers. FEMA has stated that is simply not possible due to funding and time constraints. It is essential that this new LIDAR information be included in this current map revision. Risk MAP restudies for large areas of populated unnumbered A zone areas will take years to accomplish."

The collected information and data is compiled and available and included in ***AK_data_summary.xlsx*** and supports the MBP's future study needs assessment for the participating NFIP participating communities.

Federal and Regional Data

Average Annualized Loss

In 2009 FEMA initiated the Average Annualized Loss (AAL) Study to provide a Nationwide Loss Dataset. The analysis was performed using HAZUS-MH for every county in the contiguous United States. Annualized losses are maximum potential losses for a given year based on five return periods (10, 50, 100, 200, and 500yr). Unfortunately, the State of Alaska was not included in this analysis. Even though no AAL exists for the State of Alaska, it is mentioned and being considered as a potential future dataset as it is an important data gap in the current FEMA prioritization methodology.

- 2009 Population
- Population Increase 1980-2009
- Population Increase 2009-2019
- 2009 Housing Units
- Single Claims
- Policies
- Number of Repetitive Losses
- Number of Repetitive Loss Properties
- Average County Fed Disasters (As Of 7/2009)
- Total NHD Miles + Coastal W Inlets - Federal NHD Miles

Non-Average Annualized Loss

This dataset was used to generate the flood risk deciles used in the Flood Map Modernization (Map Mod) program. The decile calculations included the use of several national datasets. This data is summarized on a HUC-8 watershed basis and is included in AK_data_summary.xlsx

Census Data

The most recent 2010 census data was collected as supporting information to the Community Boundaries and Information. Some of the parameters that will be used in the prioritization of future studies may be weighted by population in order to determine relative risk. This data is organized by census block and is

presented in the ***AK_Sequencing.gdb***.

Community Boundaries and Information

Community information from three separate sources (State Data, Census Data, and FEMA); was collected and compared. The State uses FIPS and CID numbers found in FEMA's CIS database. However, many communities do not have a number because they are outside a designated borough but are located in Alaska's "Unorganized Borough." The databases also had misspellings, incomplete community names, and other inconsistencies exacerbating database search difficulties. NFIP participating municipalities located in the Unorganized Borough are listed by census area and contiguous boundaries have been developed by FEMA. These boundaries are located as the feature class *AK_Communities_FEMA* found within the ***AK_Sequencing.gdb*** geodatabase. These contiguous boundaries will be used in the prioritization of future studies.

Data Comparison

A comparison of the three data sources is shown in the table on the next page and the resolution to the inconsistencies is noted in the last column.

Table 23: Comparison of Data Sources on Alaska Communities

Community FIPS from State Data Community List & FEMA's Community Status Book		Community FIPS from 2010 Census Data		Community FIPS from FEMA		Notes
Borough	FIPS	Borough	FIPS	Borough	FIPS	
Aleutian Islands	02010					FIPS 02010 covered by STCOFIPS 02013 and 02016
		Aleutians East	02013	Aleutians East	02013	
		Aleutians West Census Area	02016	Aleutians West	02016	
Anchorage Division	02020	Anchorage Municipality	02020	Anchorage	02020	
Angoon Division	02030					FIPS 02030 covered by STCOFIPS 02232
Barrow-North Slope Division	02040					FIPS 02030 covered by STCOFIPS 02185
Bethel Div.	02050	Bethel Census Area	02050	Bethel	02050	
Bristol Bay	02060	Bristol Bay	02060	Bristol Bay	02060	
		Denali	02068	Denali	02068	
Dillingham	02070	Dillingham Census Area	02070	Dillingham	02070	
Emmonak-Unorganized Borough	02999					FIPS 02999 covered by STCOFIPS 02270
Fairbanks North Star	02090	Fairbanks North Star	02090	Fairbanks North Star	02090	
Haines	02100	Haines	02100	Haines	02100	
		Hoonah-Angoon Census Area	02105			02105 C. A. covered by STCOFIPS 02232
Juneau Division	02110	Juneau	02110	Juneau	02110	
Kenai Peninsula	02122	Kenai Peninsula	02122	Kenai Peninsula	02122	
Ketchikan Gateway	02130	Ketchikan Gateway	02130	Ketchikan Gateway	02130	
Outer Ketchikan Division	02190					FIPS 02190 covered by STCOFIPS 02201
Kobuk Division	02140					FIPS 02140 covered by STCOFIPS 02188
Kodiak Island	02150	Kodiak Island	02150	Kodiak Island	02150	
Kuskokwim Division	02160					FIPS 02160 covered by STCOFIPS 02290
Lake and Peninsula	02164	Lake And Peninsula	02164	Lake and Peninsula	02164	
Matanuska-Susitna	02170	Matanuska-Susitna	02170	Matanuska-Susitna	02170	
Nome Division	02180	Nome Census Area	02180	Nome	02180	
North Slope	02185	North Slope	02185	North Slope	02185	
Northwest Arctic	02188	Northwest Arctic	02188	Northwest Arctic	02188	
Prince of Wales Div.	02201			Prince of Wales-Outer Ketchikan	02201	
Sitka Division	02220	Sitka City and Borough	02220	Sitka	02220	
Skagway-Yakutat Division	2230	Skagway Municipality	02230			02230 Census Area covered by STCOFIPS 02232
				Skagway-Hoonah-Angoon	02232	

***(continued)* Table 23: Comparison of Data Sources on Alaska Communities**

Community FIPS from State Data Community List & FEMA's Community Status Book		Community FIPS from 2010 Census Data		Community FIPS from FEMA		Notes
Borough	FIPS	Borough	FIPS	Borough	FIPS	
Southeast Fairbanks	02240	Southeast Fairbanks Census Area	02240	Southeast Fairbanks	02240	
Upper Yukon	02250					FIPS 02250 covered by STCOFIPS 02290
Valdez-Chitina	02260					FIPS 02261 covered by STCOFIPS 02261
Valdez-Cordova	02261	Valdez-Cordova Census Area	02261	Valdez-Cordova	02261	
Wade Hampton Division	02270	Wade Hampton Census Area	02270	Wade Hampton	02270	
Wrangell-Petersburg	02280			Wrangell-Petersburg	02280	
		Yakutat	02282	Yakutat	02282	
Yukon-Koyukuk	02290	Yukon-Koyukuk Census Area	02290	Yukon-Koyukuk	02290	
		Unnamed Census Area	02195			02195 Census Area covered by STCOFIPS 02280
		Unnamed Census Area	02198			02198 Census Area covered by STCOFIPS 02201
		Unnamed Census Area	02275			02275 Census Area covered by STCOFIPS 02280

Coordinated Needs Management Strategy (CNMS) data

CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. It defines an approach and structure for the identification and management of flood hazard mapping needs that will provide support to data driven planning and the flood map update investment process in a geospatial environment. Every stream and coastal reach nationwide is currently being assessed to determine its status.

For the State of Alaska, approximately 1,000 stream miles have been inventoried and analyzed to determine whether the stream or coastal miles meets its criteria of New, Validated or Updated Engineering (NVUE). The question CNMS will address is whether a stream (or coastal) segment is NVUE compliant. The dataset provided by FEMA shows all stream miles within Alaska as either being "Not Valid" or "Requires Assessment". According to STARR, Production and Technical Services (PTS) contractor for FEMA Region X, it is important to note that for the current CNMS inventory for Alaska in general, only FEMA's digital data was evaluated so if the area didn't have a DFIRM then it was unlikely to make it into the evaluation process. This means that participating communities with paper maps only do not have their flooding sources reflected in the current CNMS database.

Because the CNMS dataset is inherently a GIS database, it has been left in its original format – as a separate geodatabase.

Available Topography

FEMA tasked the Risk MAP Production and Technical Services (PTS) contractors to develop a Geospatial Data Inventory (GDI) of available high-quality elevation data across the Nation. The results of their efforts are summarized in a report titled *Geospatial Coordination High Resolution Topographic Inventory, Version 1.0* dated May 31, 2010.

A summary for Alaska is extracted from that report is provided as follows:

"Alaska – A majority of existing elevation data is located within the Kenai Peninsula Borough including several LiDAR datasets for the City of Seward flown in 2006 and 2009 (15 cm RMSE vertical accuracy) as well as several USGS-provided datasets covering a majority of the peninsula. Age and vertical accuracy information for this data is currently unknown. Additional LiDAR data is available for the North Slope and Yukon-Koyukuk Boroughs in northern Alaska. Vertical accuracy (where known) for most elevation data in Alaska ranges from 5-30 cm RMSE and would support 0.5-4 foot contours. Existing datasets were created in 2007 or more recently. Major source contributors included USGS's CLICK website, OpenTopography.com, state and local contacts. Very little high-resolution topographic data exists for Alaska. Several important LiDAR projects are planned for 2011 in areas within Mat-Su Borough as well as coastal areas within the Municipality of Anchorage."

Local communities were also questioned as to the availability of topographic data. This data is summarized on a community basis and is included in ***AK_Data_Summary.xlsx*** , and includes datasets not identified in the GDI described above such as the newly acquired LiDAR in 2011 for the Mat-Su Borough.

Letters of Map Change (LOMC)

LOMCs, specifically Letters of Map Amendments (LOMAs), can be used as an indicator that a map may need revision. Letters of Map Revision (LOMR) have been excluded from this dataset because, by definition, approved LOMRs already address the mapping need and are the effective NFIP document for the area covered by the LOMR restudy. LOMAs can be summarized on a borough, community, or flooding source basis. This dataset is included in Tab 12, ***AK_Data_Summary.xlsx*** (see also Appendix 1, Table 8).

Mitigation Plans

The latest report to FEMA regarding the status of Mitigation Plans was dated June 24, 2011. The dataset includes FIPS, CID, and population information for jurisdictions added in May 2011 from the FEMA Community Layer.

The presence of active mitigation plans indicates those communities are proactive in managing flood related risks. Therefore, those watersheds with a high percentage of their areas intersecting communities with mitigation plans in place are usually given a higher priority for future studies. Local communities were also questioned as to the availability of mitigation plans. This data is summarized on a community basis and is included in Tab 7, AK_Data_Summary.xlsx (see also Appendix 1, Table 7).

Non-Compliance with the NFIP

When attempts to resolve enforcement problems through community assistance or consultation have failed, the FEMA Regional Director may place a community on probation. The probationary period lasts at least until all program deficiencies have been corrected and violations have been remedied to the maximum extent possible, and it may be extended for up to one year after that. Probation has no effect on the continued availability of flood insurance. If the community fails to take remedial measures during the probationary period, the Regional Director may recommend suspension from the NFIP which would prevent residents from obtaining flood insurance. A community may also be reinstated on probationary status after having been suspended. This data is summarized on a community basis and is included in Tab 6, ***AK_Data_Summary.xlsx***.

Community Rating System (CRS)

The CRS is a voluntary program for NFIP-participating communities. Information on the State of Alaska's current listings of all CRS communities, their class, and insurance discount has been collected and are summarized on a community basis. It is included in Tab 4, ***AK_Data_Summary.xlsx***.

Disaster Declarations

A Major Disaster could result from a hurricane, earthquake, flood, tornado, or major fire which the President determines warrants supplemental federal aid. To be considered for this aid the impacts of such an event must clearly exceed the capability of state or local governments' resources or capability to manage the consequences alone. If declared, funding comes from the President's Disaster Relief Fund, which is managed by FEMA, and disaster aid programs of other participating federal agencies. Data for the State of Alaska was pulled from FEMA and is included in Tabs 9 and 10, ***AK_Data_Summary.xlsx*** (see also Appendix 1, Table 7).

Federal Insurance Administration (FIA) Data

Flood insurance information was collected from the FIA. It contains the number of single claims, the number of policies in effect, the number of repetitive losses, and the number of repetitive loss properties summarized at the borough level. The data for the State of Alaska is included in ***AK_Data_Summary.xlsx*** (see also Appendix 1, Table 4.)

Hazard Mitigation Grant Program (HMGP)

Participation in FEMA's HMGP can give a good indication that a community is willing to mitigate the risks of flood hazards. Data for the communities within the State of Alaska participating in HMGP was pulled from FEMA and is included in Tab 5, ***AK_Data_Summary.xlsx*** (see also Appendix 1, Table 8).

Alaska Prioritization and Future Studies Sequencing Decision Support System

Overview

The Alaska Prioritization and Future Studies Sequencing Decision Support System is a ranking methodology intended to provide relative comparisons between watersheds based on a number of normalized factors in the State of Alaska. It provides an analysis of information gathered on a local, state, and nationwide basis to provide a prioritization list of Alaskan watersheds to be studied under FEMA's Risk MAP Program. The term "county" used throughout this report is synonymous with the State of Alaska's "borough" and "census area" classifications.

Building upon the concept of the Risk MAP 'trifecta' approach employed in the Fiscal Year 2011 (FY11) Algorithm, this solution incorporates several additional datasets, grouping them by type, and allowing users to assign customized weighting to each of the contributing factors. While the FY11 algorithm compares absolute values of one watershed to absolute values of another watershed for Flood Risk, Need and Topographic Coverage, this new approach leverages state and local considerations based on community input to develop a ranking of Hydrologic Unit Code (HUC) 8 watersheds within Alaska. It considers the local preferences for prioritization, such as climatological change, local hazard mitigation plans, planned future development, coastal exposure, etc. Special considerations are given to communities with plans in need of updating and with an expressed interest in plan improvement or development.

A total of 16 Indicators have been considered. Individual indicators have been grouped into one of the following three factors: Flood Risk, Needs, and Action Potential. The system is built in a robust and user-friendly environment that allows users to modify the contribution of each factor (or each indicator) based on local knowledge and preference. Instructions for viewing and modifying the weights for the various ranking factors are embedded in the spreadsheet tool, ***Alaska_Risk MAP_Prioritization.xlsx .***

Acquired/Standardized Data

Various datasets were identified, collected, assembled, and analyzed through the process. Data was obtained from different sources, such as federal, regional, and state agencies, as well as local communities. The focus of this effort was to collect the best available and most up-to-date data to optimize the accuracy of the information used in the decision making process. The table below provides a detailed list of datasets which were used in the prioritization process. Each indicator was classified into one of three factors: Flood Risk, Needs, and Action Potential. These factors, as well as individual indicators, were incorporated into the algorithm after normalization by population or area weighting at the HUC-8 level. This is critical when comparing watersheds as it allows for a fair comparison between entities when population numbers and total areas are different from one to another. This evaluation is performed primarily at the HUC-8 level.

Data Processing

The different types of data provided lend themselves to inclusion in a prioritization algorithm in different

Table 24: Datasets Used in the Prioritization Process

Factor	Indicator	Source	Data Collected Date	Resolution	Notes
Flood Risk	AAL	FEMA National Discovery	June 2011	Nation-wide data on FIPS level	Not available for Alaska
	Population	FEMA	2010	Census blocks	
Needs	CNMS	FEMA (STARR)	Oct. 2010	Region-wide data on stream level	No Complete dataset for Alaska available
	Coastal Miles	FEMA		Borough/Census block	FY10 sequencing
	Topographic Coverage	State of Alaska FEMA	Nov. 2011 May, 2010	State-wide data on community level Nationwide data on community level.	
	Community Identified Needs	State of Alaska	Nov. 2011	State-wide data on community level	
	Climatologic Change	State of Alaska	Nov. 2011	State-wide data on community level	
	LOMCs	FEMA MSC	Nov 2011	State-wide data on lat., long	
	Planned Future Development	State of Alaska	Nov. 2011	State-wide data on community level	
Action Potential	Mitigation Plans	State of Alaska FEMA	Nov. 2011 June, 2011	State-wide data on community level Nationwide data on community level	
	Interest in New Community Plans	State of Alaska	Nov. 2011	State-wide data on community level	
	CRS	FEMA CRS	Oct. 2011	Nationwide data on community	
	Disaster Declarations	State of Alaska FEMA CRS	Nov. 2011 Aug. 2011	State-wide data on community level Nation-wide data on county level.	
	FIA	FEMA	Dec. 2009	Nationwide data on county	
	Mitigation Grants	State of Alaska FEMA RSS	Nov. 2011 May. 2011	State-wide data on community level Nation-wide data on county level	
	In-House GIS	State of Alaska	Nov. 2011	State-wide data on community level	

ways. To prepare the tables, decisions must be made on data type and normalization method – keeping in mind a consistent ranking method. For the purposes of this analysis we will assume that the lower the rank (1 being the lowest) the more likely a unit (FIPS, CID, HUC) is to be recommended for study (meaning it is considered a higher priority by our system). Since the goal is to make prioritization recommendations, each data table should evaluate how one unit compares to another for the factor described by that data table to the extent possible.

Area/Population Weighting

Depending on the resolution of the contributing datasets, each indicator was first ranked at a watershed (HUC-8), County (FIPS), or Community (CID) level. For factors that existed at a HUC-8 watershed level, the factor rankings transferred directly to the master ranking scheme. For factors ranked at the county or community level, the appropriate area or population weighting was applied to the data such that counties/communities with a large percentage of their respective area in a given watershed would contribute more to that watershed's eventual ranking for that factor than would the ranking of counties/communities which barely had a footprint in the watershed. The majority of the datasets used are available by political boundaries (CID or FIPS) rather than at the watershed level. The abovementioned method of ranking HUC-8 watersheds based on the area of "influence" of constituent counties/communities ensures that this transition from political boundaries to watershed boundaries is made in a meaningful manner without over- or under-representing the representative strength of the constituent counties/communities.

Considering Types of Data Inclusion – Rank vs. Binary

The data sets which have been collected can contribute to a prioritization calculation in one of two ways; they can either be used to provide a relative ranking for each unit (FIPS or CID depending on the data), or they can provide a binary YES/NO (1/0) for each unit. An example of data lending itself to ranking would be the FIA data, where each unit has its own unique set of attributes (in that case rep loss, properties, etc.). An example of data lending itself to binary inclusion would be the Climate Change table, where each community listed simply as a YES/NO. Much of the locally collected data was processed as a binary data set including Planned Future Development, Topographic Coverage, Community Identified Needs, Mitigation Plans, Interest in New Community Plans, Mitigation Grants, In-House GIS, IAID, and Climatological Change.

Risk Factor

Average Annualized Loss Rank

The Average Annualized Loss (AAL) Rank is a ranking, by watershed, of the total AAL. This starts with a Rank of 1 being the watershed with the highest AAL dollar amount. However, no AAL data analysis was available for Alaska to use on this project. Therefore, all the watersheds had the same ranking and no weighting factor is applied to this indicator. When the AAL data becomes available in the future, the indicator can be introduced to the algorithm. With proper weighting factor, AAL could contribute to the Risk factor.

Population Rank

Population Rank rates the highest population with a value of 1 to indicate that it is the most important, and increases in order to the watershed of lowest population.

Needs Factor

Coordinated Needs Management Strategy (CNMS)

This ranking uses the CNMS inventory to compare mileages within each watershed, which are considered Non-NVUE. New, Validated, or Updated Engineering (NVUE) is the FEMA standard that provides a basis for assessing the engineering analysis used to develop flood elevations. FEMA developed the standard to help mapping partners determine where new study data should be collected, where updates to existing flood hazard data should be performed, and whether previously developed flood study data could still be considered valid. The Non-NVUE category is composed of all paper inventory study miles, as well as any modernized NOT VALID and REQUIRES ASSESSMENT mileage. Higher priority can be given to watersheds with more mileage in this category. The CNMS data for Alaska currently shows that ALL stream miles are Non-NVUE compliant, thus all watersheds will have the same rank for this indicator. Additionally, FEMA's contractor STARR indicated that the only streams currently included in CNMS for the State of Alaska are those currently in DFIRM format. This excludes a large number of streams and makes this dataset incomplete. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs factor.

Coastal Miles

Since the CNMS inventory only includes riverine mileages, a significant amount of coastal shoreline mileages within the state of Alaska are not considered. The Coastal Needs indicator addresses the needs of floodplain studies for coastal communities. The indicator ranks all watersheds based on the linear distance of coastline within a watershed as it relates to the overall area of coastal communities within the state. Higher priority is given to watersheds that include more coastal communities.

Topographic Coverage Rank

Topographic data availability was part of the FY11 algorithm and is considered here as an action potential. Here watersheds are ranked based on the percentage of their area that are covered by available topographic coverage (discounting the 30m resolution National Elevation Dataset- NED), with a Rank of 1 representing the watershed(s) with the highest percentage of topographic coverage. The base NED product was discounted based on the National Academy's findings on floodplain analyses and quality elevation data and the associated applicability of this particular dataset.

Community Identified Needs Rank

Community Identified Needs ranking is a weighted value representing the needs which were previously unidentified. Several communities have expressed the need for new or updated flood studies. Higher

priority was given to communities that have identified such needs.

Climatological Change Rank

This ranking utilizes local input to identify any significant climatological changes observed in a community. Several communities have reported hydrological impact caused by climatological changes, such as rising sea level, glacier recessions, flooding introduced by glacial dam breaches, melting of permafrost, etc.

This factor evaluates the relative area of a watershed where the impact of significant climatological changes was reported. The watersheds are ranked based on the percentage of their area with significant climatological changes.

LOMC Rank

The Letters of Map Change (LOMC) ranking is a combined weighted value representing the presence and number of LOMCs within communities located in specific watersheds. Higher priority was given to watersheds including communities with greater numbers of processed LOMCs.

Planned Future Development Rank

This ranking utilizes the local inputs to identify any planned future development in a community. It evaluates the area of planned future development within a watershed as it relates to the overall area within the State of Alaska. A rank of 1 indicates a watershed which has seen the highest percentage of area that has planned future development. This is considered a Need because the planned future development is an indicator of future urbanization where the new physical environment is no longer being represented appropriately in the engineering model and on the map.

Action Potential Factor

Mitigation Plan Rank

The Mitigation Plan ranking is a weighted value indicating the presence of active mitigation plans within communities located in a watershed. Higher priority was given to those watersheds of which higher percentages of their respective areas included communities with mitigation plans in place.

Interest in New Community Plans

The Interest in New Community Plans ranking is a weighted value indicating the willingness of communities to either update their plans or develop new community plans. Higher priority was given to watersheds of which higher percentages of their respective areas included communities with community plans in place.

Community Rating System Rank

The Community Rating System (CRS) ranking is a combined weighted value representing the CRS rating of communities located in each of the watersheds. Higher priority was given to watersheds that included communities with a better overall CRS rating. In essence, communities that are more in compliance and have a better CRS rating will contribute positively to achieving the goals of Risk MAP.

Disaster Declarations Rank

The Disaster Declarations ranking is a weighted value indicating the presence of communities within the watershed that have a history of declared flood disasters. Higher priority was given to watersheds that have more disaster declarations with the thought that communities that have had disasters declared are more likely to value and implement mitigation action to limit the scope of the impact in the future. It also provides a part of the outreach communications.

Flood Insurance Administration Rank

The Flood Insurance Administration (FIA) ranking is a combined weighted value representing claims, policies, repetitive loss, and repetitive loss properties intersecting the watersheds using a per capita, per unit area normalization. Higher priority was given to watersheds that included communities with high occurrences of these factors per capita per unit area.

Mitigation Grants Rank

The Grants ranking is a combined weighted value representing presence of ongoing/recent studies within the communities or portions thereof within each of the watersheds. Higher priority was given to areas receiving greater mitigation grants. This is based on the assumption that because these communities have received mitigation funding recently, they could be more likely to improve their communities in other ways.

In-House GIS Rank

The In-House GIS ranking is an indicator of the community's capability to participate in the Risk MAP Program. A community with a strong in-house GIS program and proper supporting staff is more likely to carry out relevant aspects of the Risk MAP Program. Higher priority was been given to watersheds, which have the higher percentages of their areas intersecting communities with a confirmed In-House GIS program.

Application of the Prioritization and Future Studies Sequencing Decision Support System

The ***Alaska_Risk MAP_Prioritization.xlsx*** spreadsheet has eight tabs: Factor_Weights, HUC-8_Rankings, Scenarios, HUC_Rank, HUC_Summary, AK_Master, State_data_Summary, and NFIP.

The "Factor_Weights" tab allows the users to adjust the weighting factors based on community preferences. Initially, all editable fields (colored yellow) have been set to recommended weights. Users have the ability to evaluate the relative importance of three factors of Risk, Needs, and Action potential. In addition, users can adjust each indicator under subgroups if desired. Changing values in this tab will result in a new watershed prioritization within the 'HUC-8_Rankings' Tab.

The "HUC-8_Rankings" tab provides a summary of HUC-8 watershed's prioritization based on the user-specified weighting factors that are shown in the "WorkSheet" tab.

The "Scenarios" tab allows the user to capture certain weighting factor scenarios and compares the prioritization results side-by-side. Four pre-rendered scenarios are provided. The four scenarios are titled: Typical, Need Heavy, Risk Heavy, and Action Heavy with the most weight applied to their respective primary factor. The watershed rankings are conditionally formatted to allow for quick identification of high priority watersheds and can be sorted in a variety of ways.

Scenarios can be added using the instructions found within the "Adding Scenarios" section of this report. Both the "HUC_Summary" and "HUC_Rank" tabs show the rolled up summary watershed scores and rank tables resulting from the "AK_Master" analysis.

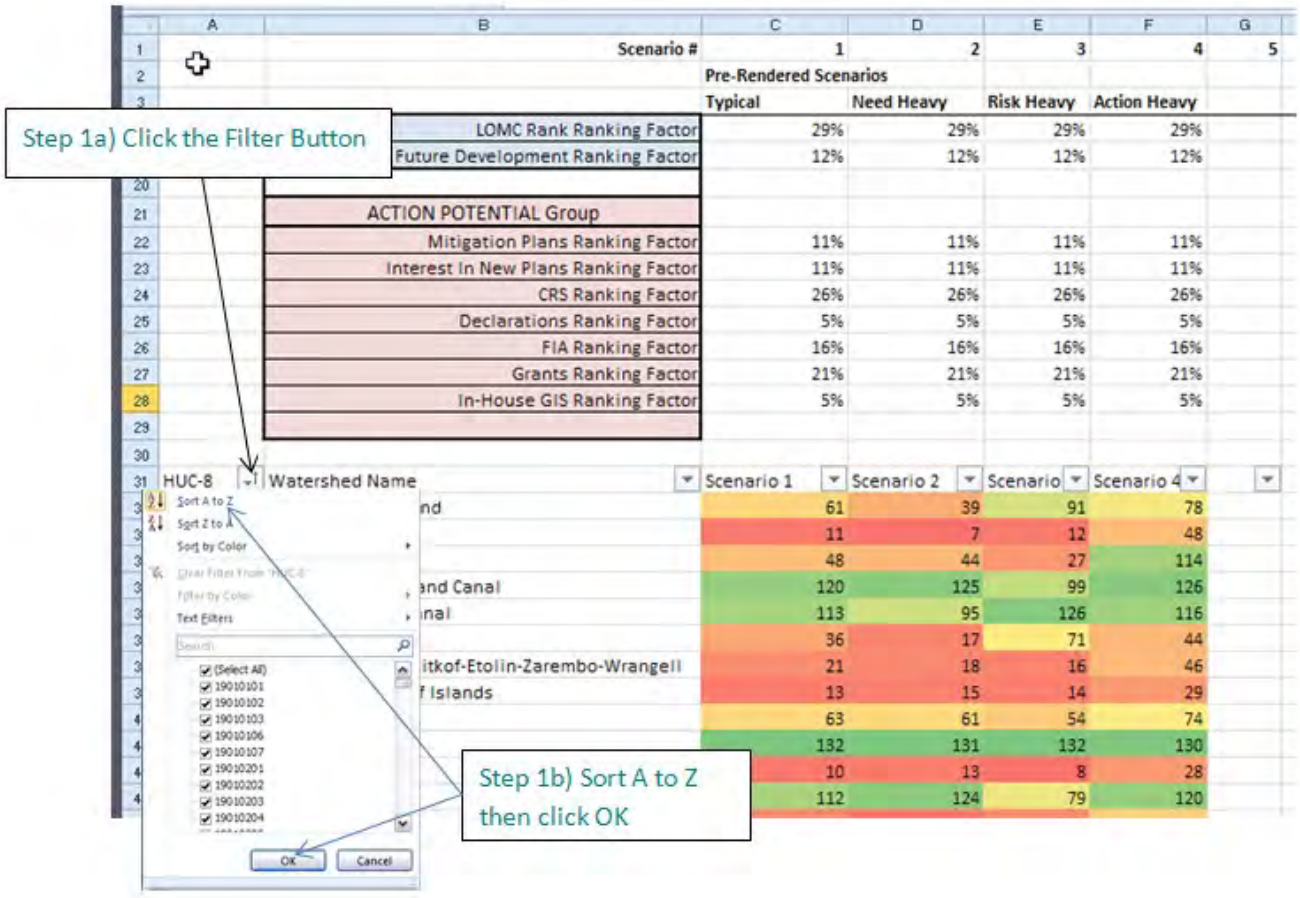
The "AK_Master" worksheet contains both the results of the GIS intersection of the Watershed, Community, FEMA borough, and Census boundaries as well as all of the required data manipulations to produce the required indicator scores.

The "State_Data_Summary" worksheet contains the summary of the local data provided by those communities participating in the NFIP. It also contains the binary and relative ranking summary data for this local data used in the "AK_Master" worksheet.
The "NFIP" worksheet summarizes the watershed rankings in relation to the NFIP participating community.

Adding Scenarios

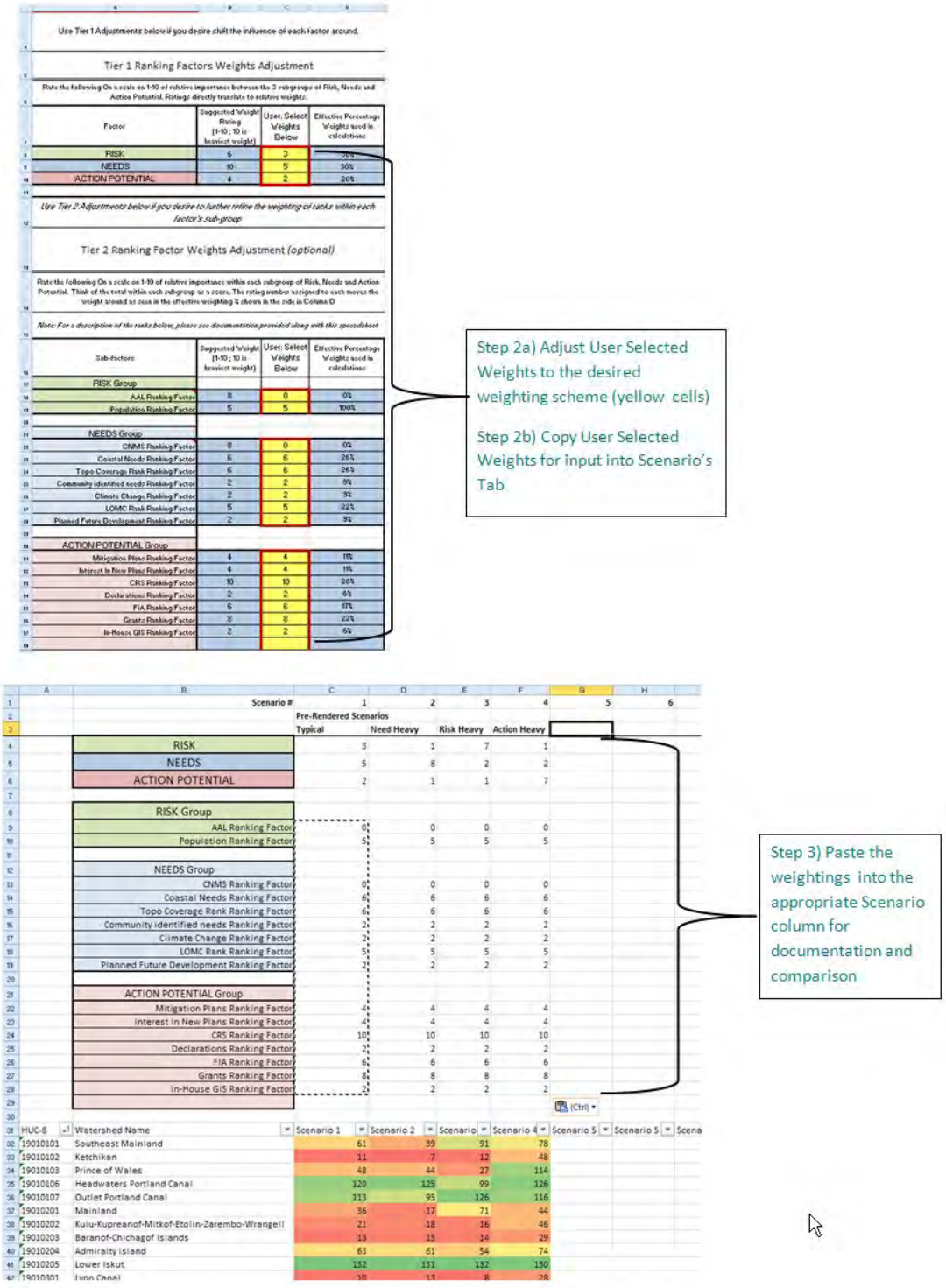
Step 1: Ensure that the HUC-8 data and their respective rankings are sorted in ascending order. Clicking the filter tab button will generate a popup that will allow sorting in ascending order.

Figure 38: Step 1



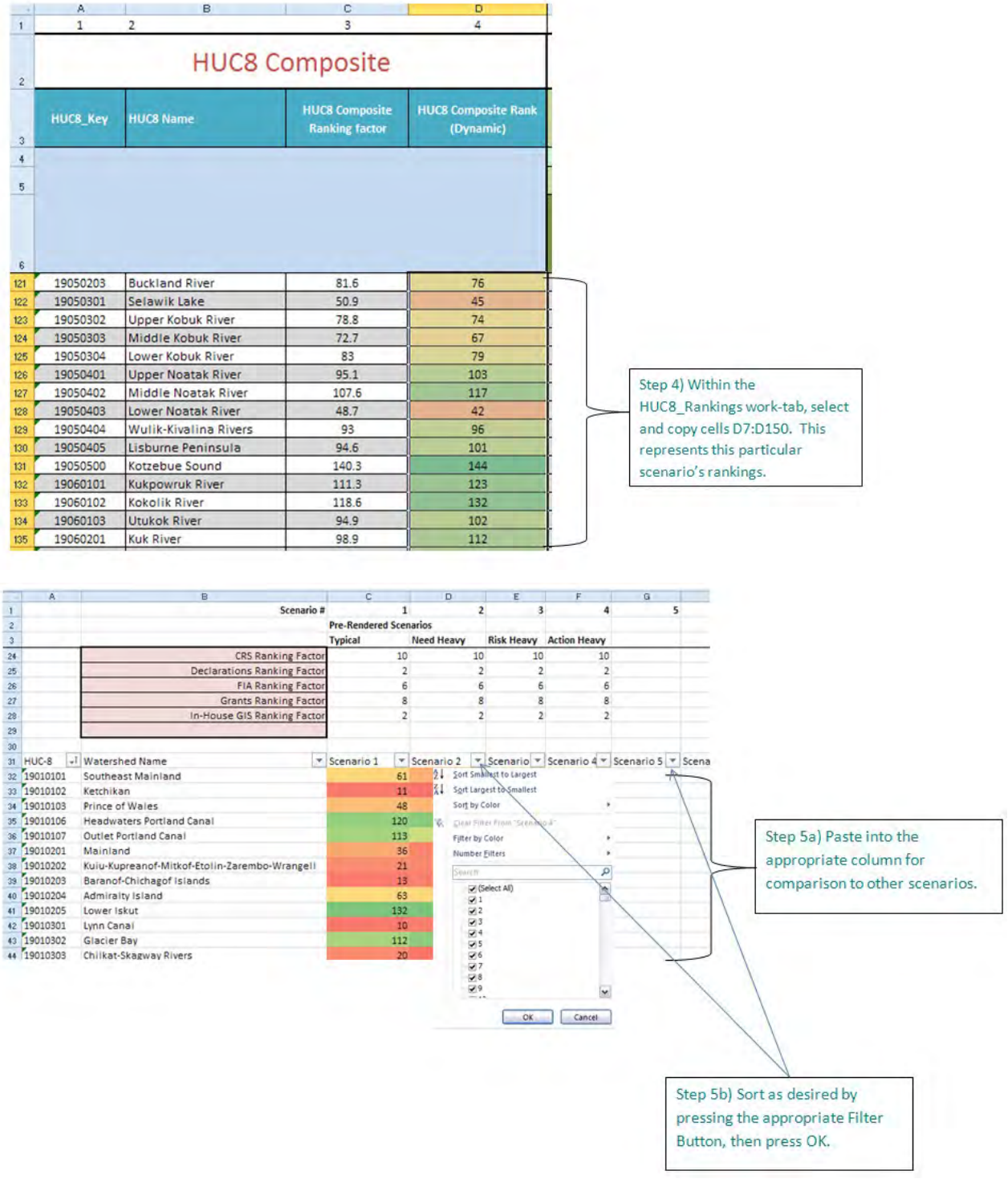
Step 2 and 3: Adjust the weighting factors and copy them into the Scenario's work-tab to identifyhe weighting scheme for this particular scenario.

Figure 39: Steps 2 and 3



Step 4 and 5: Select and copy the watershed rankings then paste them into the Scenario worktab. Once pasted in, the results will be color coded according to the ranking. Sorting is performed by pressing the filter button and sorting as desired.

Figure 40: Steps 4 and 5



Prioritization of Future Mapping Needs

The focus of this work is to provide a baseline for prioritizing future study needs of Alaska's NFIP participating communities. The data collection and analysis results indicate that the Upper Kenai Peninsula (HUC 19020302) should be considered a high priority. The overall ranking for this watershed was insensitive to the weighting distribution scenarios that were tested. Adjacent watersheds also had high prioritization rankings.

The NFIP communities that are located in these high prioritized watersheds include Kenai Peninsula Borough, City of Kenai, Municipality of Anchorage, City of Soldotna, City of Aniak, City of Bethel, City of Kwethluk, City of Emmonak, City of Cordova, and the Matanuska-Susitna Borough. The prioritized rankings are illustrated by the map in Figure 21, next page, and by Table 26 on pages 92 and 93. Table 27 on pages 94-95 provides a listing of NFIP-participating communities by ranked HUC-8 watershed.

In general, the watershed rankings show that the South Central Alaska portions (Anchorage, and Matanuska-Susitna Boroughs) should be given higher priority. The coastal areas for these boroughs as well as the Western Alaska coastal areas (including Bethel and Wade Hampton) also need focused Risk MAP studies.

Completing the CNMS analysis is critical to accomplishing future analysis or updates to this activity. The current CNMS indicator for Alaska currently shows all watersheds will have the same rank. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs Factor.

Also, a statewide risk analysis needs to be performed. The risk analysis will define the average annualized losses. When the AAL data becomes available in the future, the indicator can be introduced to the algorithm. With proper weighting factor, AAL could contribute to the Risk factor.

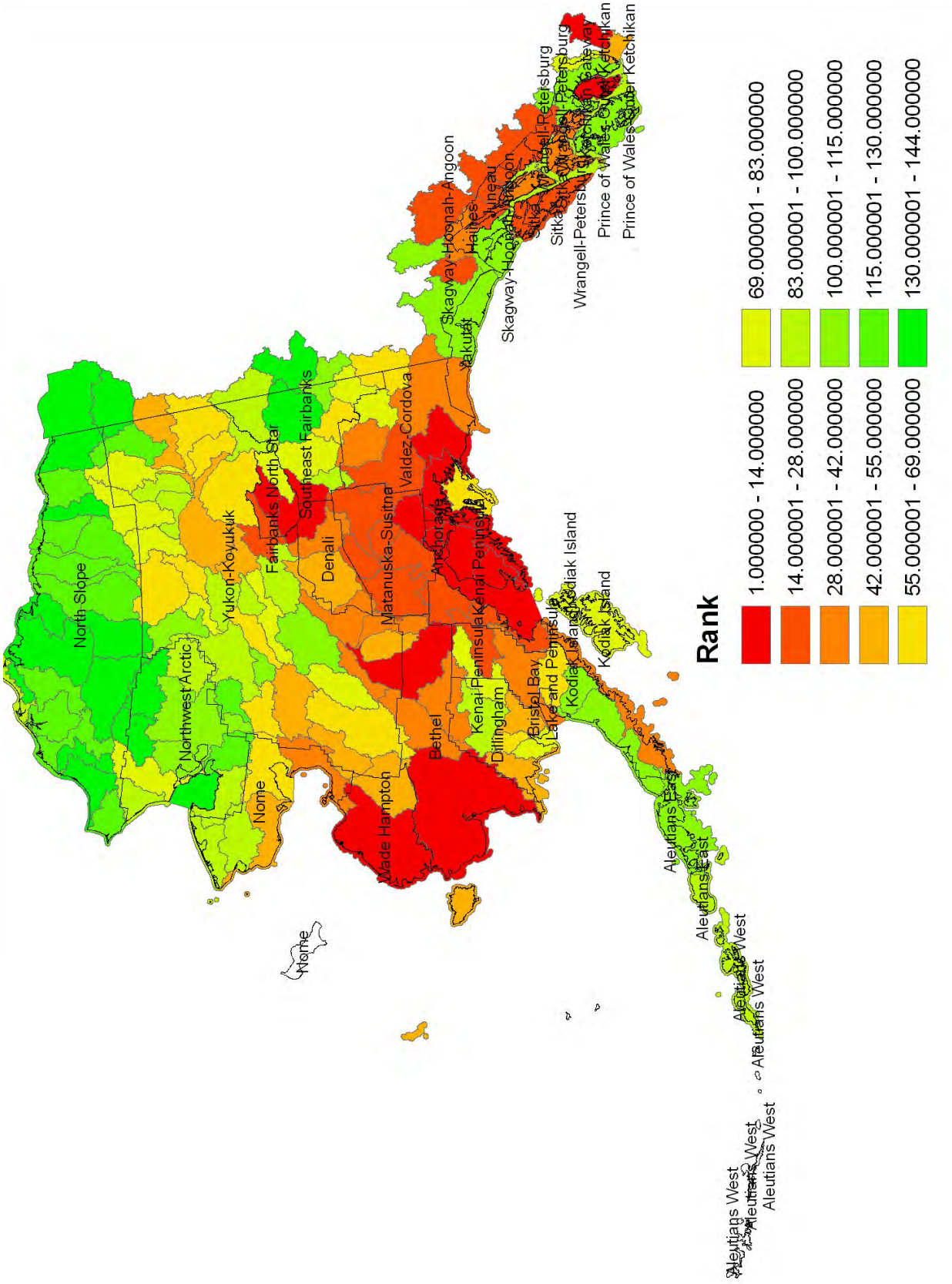


Figure 41: Map of Rankings of Watersheds Based on Scenario 1

Table 25: Ranking of Alaska's HUC-8 Watersheds Based on Scenarios 1-4

HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4
19020302	Upper Kenai Peninsula	1	1	1	1
19030502	Kuskokwim Delta	2	4	3	3
19040805	Yukon Delta	3	2	6	6
19020201	Eastern Prince William Sound	4	3	9	2
19020301	Lower Kenai Peninsula	5	6	4	5
19020202	Western Prince William Sound	6	5	13	7
19020401	Anchorage	7	14	2	4
19020402	Matanuska	8	19	4	8
19020102	Middle Copper River	9	8	18	9
19010301	Lynn Canal	10	13	8	28
19010102	Ketchikan	11	7	12	48
19020104	Lower Copper River	12	9	24	10
19010203	Baranof-Chichagof Islands	13	15	14	29
19050104	Nome	14	16	17	24
19040506	Chena River	15	30	7	17
19040507	Tanana Flats	16	29	11	13
19030405	Stony River	17	12	33	12
19040804	Anvik to Pilot Station	18	20	22	18
19020601	Redoubt-Trading Bays	19	11	38	10
19010303	Chilkat-Skagway Rivers	20	10	20	58
19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21	18	16	46
19020505	Lower Susitna River	22	37	10	16
19050102	Unalakleet	23	24	23	36
19020701	Kodiak-Afognak Islands	24	32	15	40
19020702	Shelikof Straight	25	22	43	21
19030206	Lake Iliamna	26	26	31	43
19030205	Lake Clark	27	25	42	26
19020101	Upper Copper River	28	27	37	22
19050201	Shishmaref	29	33	31	35
19020800	Cook Inlet	30	35	26	33
99999999	#N/A	31	34	25	57
19010402	Bering Glacier	32	23	65	15
19040509	Tolovana River	32	47	19	23
19030501	Aniak	34	28	50	30
19030102	Fox Islands	34	34	21	75
19020602	Tuxedni-Kamishak Bays	35	21	85	14
19010201	Mainland	36	17	71	44
19050103	Norton Bay	38	42	41	45
19040501	Nebesna - Chisana Rivers	39	41	54	32
19010304	Taku River	40	31	62	46
19040508	Nenana River	40	49	29	53
19050403	Lower Noatak River	42	51	26	63
19020501	Upper Susitna River	43	39	66	19
19050105	Imuruk Basin	43	46	45	55
19030101	Cold Bay	45	42	29	100
19050301	Selawik Lake	45	48	36	58
19020504	Yentna River	47	43	76	20
19040403	Yukon Flats	47	60	40	27
19010103	Prince of Wales	48	44	27	114
19030305	Togiak	50	56	36	61
19040705	Galena	50	67	35	25
19030204	Naknek	52	48	41	80
19040505	Salcha River	52	53	58	34
19030404	Holitna River	54	37	96	50
19030407	South Fork Kuskokwim River	55	52	72	51
19020503	Talkeetna River	56	55	67	41
19040601	Upper Koyukuk River	56	66	56	39
19020502	Chulitna River	57	54	84	37
19040803	Lower Innoko River	59	59	81	30
19040801	Anvik River	59	61	62	54
19010101	Southeast Mainland	61	39	91	78
19030303	Lower Nushagak River	61	68	33	87
19010401	Yakutat Bay	62	53	51	119
19010204	Admiralty Island	63	61	54	74
19040608	Koyukuk Flats	65	76	61	42
19040302	East Fork Chandalar River	66	65	76	67
19050303	Middle Kobuk River	67	75	59	77
19060402	Sagavanirktok River	68	70	54	111
19030201	Port Heiden	69	57	81	118
19040402	Birch-Beaver Creeks	69	83	72	38
19040205	Porcupine Flats	70	73	95	52

(continued) Table 25: Ranking of Alaska's HUC-8 Watersheds Based on Scenarios 1-4

HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4
19060401	Kuparuk River	72	82	46	115
19050202	Goodhope-Sparkarief Bay	73	72	84	74
19050302	Upper Kobuk River	74	79	79	71
19030202	Ugashik Bay	75	70	89	106
19030503	Nunavak-St.Matthew Islands	75	81	78	72
19050203	Buckland River	76	90	68	85
19040511	Lower Tanana River	77	92	77	60
19030401	North Fork Kuskokwim River	78	81	98	55
19050304	Lower Kobuk River	79	99	52	91
19040504	Delta River	80	103	51	89
19060304	Lower Colville River	82	88	63	122
19040203	Sheenjek River	83	78	109	64
19040502	Tok	84	110	49	92
19060204	Ikpikpuk River	85	64	113	113
19060303	Chandler-Anaktuvuk Rivers	86	0	103	114
19040204	Black River	87	96	97	61
19030304	Wood River	87	104	57	109
19040702	Nowitna River	88	91	106	49
19060203	Meade River	89	87	82	123
19030301	Upper Nushagak River	89	90	82	101
19060301	Upper Colville River	90	62	125	109
19040101	White River	91	84	111	69
19030306	Nushagak Bay	92	106	60	110
19030302	Mulchatna River	93	76	105	105
19040704	Ramparts to Ruby	93	116	74	66
19060302	Killik River	95	68	129	103
19050404	Wulik-Kivalina Rivers	96	113	67	105
19040202	Coleen River	99	89	116	68
19060502	Camden Bay	100	95	85	132
19050405	Lisburne Peninsula	101	108	65	130
19030203	Egegik Bay	102	91	94	115
19060103	Utukok River	102	93	93	131
19050401	Upper Noatak River	103	85	124	90
19040503	Healy Lake	104	126	48	104
19060503	Beaufort Lagoon	105	77	123	116
19040401	Eagle to Circle	105	115	88	80
19020203	Prince William Sound	106	100	95	94
19060202	Northwest Coast	107	122	47	136
19030403	Takotna River	108	106	101	79
19040301	Middle Fork-North Fork Chandalar Rivers	110	100	108	87
19040802	Upper Innoko River	111	105	115	65
19060201	Kuk River	112	94	102	128
19010302	Glacier Bay	112	124	79	120
19010107	Outlet Portland Canal	113	95	126	116
19030406	Middle Fork Kuskokwim River	114	104	119	69
19040605	Allakaket	115	128	92	100
19040404	Ramparts	116	121	107	82
19050402	Middle Noatak River	117	101	132	108
19040304	Lower Chandalar River	118	127	98	98
19060403	Mikkelson Bay	120	110	110	137
19010106	Headwaters Portland Canal	120	125	99	126
19040603	Alatna River	122	118	130	73
19060101	Kukpowruk River	123	108	122	135
19040206	Grass River	124	119	127	86
19040609	Kateel River	125	123	128	83
19040602	South Fork Koyukuk River	126	131	121	97
19040604	Kanuti River	127	124	136	84
19060501	Canning River	128	117	118	139
19040510	Kantishna River	130	135	114	94
19040703	Melozitna River	131	130	133	93
19060102	Kokolik River	132	125	116	140
19010205	Lower Iskut	132	131	132	130
19040303	Christian River	133	132	134	96
19010500	Icy Strait-Chatham Strait	133	133	134	133
19040606	Huslia River	134	129	137	99
19040607	Dulbi River	135	137	131	118
19060205	Harrison Bay	136	120	139	141
19040104	Forty Mile River	137	139	120	129
19040701	Tozitna River	138	136	140	117
19040102	Ladue River	139	141	126	134
19040201	Old Crow River	140	138	138	127
19040103	Sixty Mile River	143	144	142	143
19050500	Kotzebue Sound	144	143	144	144

Table 26: NFIP-Participating Communities by Ranked HUC-8 Watershed

NFIP PARTICIPATING COMMUNITY	FIPS	CID	HUC_8	Watershed Name	Rank
Kenai Peninsula Borough	02122	02122X	19020302	Upper Kenai Peninsula	1
Kenai, City of	02122	020126	19020302	Upper Kenai Peninsula	1
Municipality of Anchorage	02020	020005	19020302	Upper Kenai Peninsula	1
Soldotna, City of	02122	020014	19020302	Upper Kenai Peninsula	1
Aniak, City of	02050	020033	19030502	Kuskokwim Delta	2
Bethel, City of	02050	020104	19030502	Kuskokwim Delta	2
Kwethluk, City of	02050	020130	19030502	Kuskokwim Delta	2
Emmonak, City of	02270	020125	19040805	Yukon Delta	3
Cordova, City of	02261	020037	19020201	Eastern Prince William Sound	4
Kenai Peninsula Borough	02122	02122X	19020201	Eastern Prince William Sound	4
Matanuska-Susitna, Borough of	02170	02170X	19020201	Eastern Prince William Sound	4
Municipality of Anchorage	02020	020005	19020201	Eastern Prince William Sound	4
Valdez, City of	02261	020094	19020201	Eastern Prince William Sound	4
Homer, City of	02122	020107	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	02122	02122X	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	02122	02122X	19020202	Western Prince William Sound	6
Seward, City of	02122	020113	19020202	Western Prince William Sound	6
Matanuska-Susitna, Borough of	02170	02170X	19020401	Anchorage	7
Municipality of Anchorage	02020	020005	19020401	Anchorage	7
Matanuska-Susitna, Borough of	02170	02170X	19020402	Matanuska	8
Municipality of Anchorage	02020	020005	19020402	Matanuska	8
Municipality of Anchorage	02170	020005	19020402	Matanuska	8
Matanuska-Susitna, Borough of	02170	02170X	19020102	Middle Copper River	9
City & Borough of Juneau	02110	02110X	19010301	Lynn Canal	10
Haines Borough	02100	02100X	19010301	Lynn Canal	10
Ketchikan Gateway Borough	02130	02130X	19010102	Ketchikan	11
Ketchikan Gateway Borough	02130	02130X	19010102	Ketchikan	11
Cordova, City of	02261	020037	19020104	Lower Copper River	12
City & Borough of Sitka	02220	02220X	19010203	Baranof-Chichagof Islands	13
City & Borough of Sitka	02280	02195X	19010203	Baranof-Chichagof Islands	13
Hoonah, City of	02105	020049	19010203	Baranof-Chichagof Islands	13
Wrangell City & Borough	02280	02195X	19010203	Baranof-Chichagof Islands	13
Nome, City of	02180	020069	19050104	Nome	14
Fairbanks North Star Borough	02090	02090X	19040506	Chena River	15
Fairbanks North Star Borough	02090	02090X	19040507	Tanana Flats	16
Nenana, City of	02290	025010	19040507	Tanana Flats	16
Kenai Peninsula Borough	02122	02122X	19030405	Stony River	17
Lake and Peninsula Borough	02164	02164X	19030405	Stony River	17
McGrath, City of	02290	020128	19030405	Stony River	17
Kenai Peninsula Borough	02122	02122X	19020601	Redoubt-Trading Bays	19
Lake and Peninsula Borough	02164	02164X	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	02122	02122X	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	02170	02170X	19020601	Redoubt-Trading Bays	19
Haines Borough	02100	02100X	19010303	Chilkat-Skagway Rivers	20
Municipality of Skagway	02232	025011	19010303	Chilkat-Skagway Rivers	20
Petersburg, City of	02280	020074	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	020098	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02195X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02275X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02280X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Matanuska-Susitna, Borough of	02170	02170X	19020505	Lower Susitna River	22
Kenai Peninsula Borough	02122	02122X	19020702	Shelikof Straight	25
Lake and Peninsula Borough	02164	02164X	19020702	Shelikof Straight	25
Kenai Peninsula Borough	02122	02122X	19030206	Lake Iliamna	26
Lake and Peninsula Borough	02164	02164X	19030206	Lake Iliamna	26
Kenai Peninsula Borough	02122	02122X	19030205	Lake Clark	27
Lake and Peninsula Borough	02164	02164X	19030205	Lake Clark	27
Northwest Arctic Borough	02188	02188X	19050201	Shishmaref	29
Shishmaref, City of	02180	020084	19050201	Shishmaref	29
Homer, City of	02122	020107	19020800	Cook Inlet	30
Kenai Peninsula Borough	02122	02122X	19020800	Cook Inlet	30
Kenai, City of	02122	020126	19020800	Cook Inlet	30
Matanuska-Susitna, Borough of	02170	02170X	19020800	Cook Inlet	30
Municipality of Anchorage	02020	020005	19020800	Cook Inlet	30
Fairbanks North Star Borough	02090	02090X	19040509	Tolovana River	32
Aniak, City of	02050	020033	19030501	Aniak	34
Kenai Peninsula Borough	02122	02122X	19020602	Tuxdeni-Kamishak Bays	35
Lake and Peninsula Borough	02164	02164X	19020602	Tuxdeni-Kamishak Bays	35
City & Borough of Juneau	02110	02110X	19010201	Mainland	36
Wrangell City & Borough	02280	020098	19010201	Mainland	36
Wrangell City & Borough	02280	02280X	19010201	Mainland	36
Northwest Arctic Borough	02188	02188X	19050103	Norton Bay	38
City & Borough of Juneau	02110	02110X	19010304	Taku River	40
Matanuska-Susitna, Borough of	02170	02170X	19040508	Nenana River	40
Nenana, City of	02290	025010	19040508	Nenana River	40
Kotzebue, City of	02188	020059	19050403	Lower Noatak River	42
Northwest Arctic Borough	02188	02188X	19050403	Lower Noatak River	42
Matanuska-Susitna, Borough of	02170	02170X	19020501	Upper Susitna River	43
Northwest Arctic Borough	02188	02188X	19050105	Imuruk Basin	43
Lake and Peninsula Borough	02164	02164X	19030101	Cold Bay	45
Northwest Arctic Borough	02188	02188X	19050301	Selawik Lake	45

(continued) Table 26: NFIP-Participating Communities by Ranked HUC-8 Watershed

NFIP PARTICIPATING COMMUNITY	FIPS	CID	HUC_8	Watershed Name	Rank
Fort Yukon, City of	02290	020045	19040403	Yukon Flats	47
Kenai Peninsula Borough	02122	02122X	19020504	Yentna River	47
Matanuska-Susitna, Borough of	02170	02170X	19020504	Yentna River	47
Galena, City of	02290	020124	19040705	Galena	50
Koyukuk, City of	02290	020127	19040705	Galena	50
Togiak, City of	02070	020090	19030305	Togiak	50
Fairbanks North Star Borough	02090	02090X	19040505	Salcha River	52
Kenai Peninsula Borough	02122	02122X	19030204	Naknek	52
Lake and Peninsula Borough	02164	02164X	19030204	Naknek	52
Lake and Peninsula Borough	02164	02164X	19030404	Holitna River	54
Matanuska-Susitna, Borough of	02170	02170X	19030407	South Fork Kuskokwim River	55
Matanuska-Susitna, Borough of	02170	02170X	19020503	Talkeetna River	56
Matanuska-Susitna, Borough of	02170	02170X	19020502	Chulitna River	57
Dillingham, City of	02070	020041	19030303	Lower Nushagak River	61
Ketchikan Gateway Borough	02130	02130X	19010101	Southeast Mainland	61
Ketchikan Gateway Borough	02280	02275X	19010101	Southeast Mainland	61
Lake and Peninsula Borough	02164	02164X	19030303	Lower Nushagak River	61
Wrangell City & Borough	02280	020098	19010101	Southeast Mainland	61
Wrangell City & Borough	02130	02130X	19010101	Southeast Mainland	61
Wrangell City & Borough	02280	02275X	19010101	Southeast Mainland	61
Wrangell City & Borough	02280	02280X	19010101	Southeast Mainland	61
City & Borough of Juneau	02110	02110X	19010204	Admiralty Island	63
City & Borough of Juneau	02110	02110X	19010204	Admiralty Island	63
Northwest Arctic Borough	02188	02188X	19040608	Koyukuk Flats	65
Northwest Arctic Borough	02188	02188X	19050303	Middle Kobuk River	67
Fairbanks North Star Borough	02090	02090X	19040402	Birch-Beaver Creeks	69
Lake and Peninsula Borough	02164	02164X	19030201	Port Heiden	69
Fort Yukon, City of	02290	020045	19040205	Porcupine Flats	70
Northwest Arctic Borough	02188	02188X	19050202	Goodhope-Spafarief Bay	73
Northwest Arctic Borough	02188	02188X	19050302	Upper Kobuk River	74
Lake and Peninsula Borough	02164	02164X	19030202	Ugashik Bay	75
Northwest Arctic Borough	02188	02188X	19050203	Buckland River	76
Nenana, City of	02290	025010	19040511	Lower Tanana River	77
Matanuska-Susitna, Borough of	02170	02170X	19030401	North Fork Kuskokwim River	78
Northwest Arctic Borough	02188	02188X	19050304	Lower Kobuk River	79
Delta Junction, City of	02240	020040	19040504	Delta River	80
Matanuska-Susitna, Borough of	02170	02170X	19040504	Delta River	80
Dillingham, City of	02070	020041	19030304	Wood River	87
Northwest Arctic Borough	02188	02188X	19060301	Upper Colville River	90
Dillingham, City of	02070	020041	19030306	Nushagak Bay	92
Lake and Peninsula Borough	02164	02164X	19030302	Mulchatna River	93
Northwest Arctic Borough	02188	02188X	19050404	Wulik-Kivalina Rivers	96
Northwest Arctic Borough	02188	02188X	19050405	Lisburne Peninsula	101
Lake and Peninsula Borough	02164	02164X	19030203	Egegik Bay	102
Northwest Arctic Borough	02188	02188X	19050401	Upper Noatak River	103
Delta Junction, City of	02240	020040	19040503	Healy Lake	104
Fairbanks North Star Borough	02090	02090X	19040503	Healy Lake	104
Fairbanks North Star Borough	02090	02090X	19040401	Eagle to Circle	105
Kenai Peninsula Borough	02122	02122X	19020203	Prince William Sound	106
McGrath, City of	02290	020128	19030403	Takotna River	108
Haines Borough	02100	02100X	19010302	Glacier Bay	112
Ketchikan Gateway Borough	02130	02130X	19010107	Outlet Portland Canal	113
Northwest Arctic Borough	02188	02188X	19050402	Middle Noatak River	117
Ketchikan Gateway Borough	02130	02130X	19010106	Headwaters Portland Canal	120
Northwest Arctic Borough	02188	02188X	19040603	Alatna River	122
Fort Yukon, City of	02290	020045	19040206	Grass River	124
Wrangell City & Borough	02280	02280X	19010205	Lower Iskut	132
Wrangell City & Borough	02280	020098	19010500	Icy Strait-Chatham Strait	133
Wrangell City & Borough	02280	02280X	19010500	Icy Strait-Chatham Strait	133
Northwest Arctic Borough	02188	02188X	19040606	Huslia River	134
Northwest Arctic Borough	02188	02188X	19050500	Kotzebue Sound	144

CHAPTER EIGHT: PRIORITIZATION OF ENVIRONMENTALLY THREATENED ALASKA NATIVE VILLAGES FOR FUTURE RISK MAP STUDIES

A long-identified need for providing assistance to Alaska's at-risk communities is a fair, defensible methodology which identifies the communities at greatest risk, thereby enabling resources and assistance to be prioritized to the greatest need. In 2009, the Immediate Action Working Group noted in its Recommendations Report to the Governor's Climate Change Sub-Cabinet:

> *"The number of potentially affected communities impacted by climate change phenomena will grow and will require a systems approach if the State of Alaska is to effectively address the increased needs for each community on a prioritized basis."*

Partially in response to this need, in March 2017 the Denali Commission funded the U.S. Army Corps of Engineers Alaska District, the Cold Regions Research and Engineering Laboratory, and the University of Alaska Fairbanks in a Statewide Threat Assessment Project. The goals of this study were to:

1) Assess individual threats to public infrastructure associated with erosion, flooding, and thawing permafrost in Alaska communities
2) Evaluate the combined threat imposed by interactions between erosion, flooding, and thawing permafrost in Alaska communities; and
3) Provide guidance to decision makers regarding the technical information required to develop mitigation or adaptation strategies related to those threats. The assessment focused on 186 communities and was completed in 2019.

Normalized community scores and community ranks were developed for each threat, after which the data was plotted, evaluated, and grouped according to the relative threat level. Communities placed in Group 1 were under the greatest threat from erosion, flood, or thawing permafrost, while communities placed in Group 3 were the least threatened. Group 2 communities were associated with a moderate threat. Criteria for development of each group were based on immediacy, impact, the presence of life safety concerns and required support from outside the region. Communities were also ranked according to combined scores to provide insight into how the threats may compound.

The watersheds selected (pages 155-156) for future Risk MAP studies were identified in the following manner:

- The communities in the Threat Assessment with combined threat scores of less than 30 were initially selected. These were the most threatened communities, all belonging to Group 1 for at least one of the hazard threats, and most belonging to Group 1 for two or all of the three threats (erosion, flooding and permafrost thaw).

- Kivalina, Newtok, Shaktoolik and Shishmaref were removed because these communities have already undergone significant hazard studies, are at the point of implementing solutions, and therefore would not benefit as much as other communities from the Risk MAP process. Emmonak and Kotlik were removed because they have already been prioritized for Risk MAP studies.

- The remaining communities were then grouped by HUC-8 watershed.
  - Communities with combined threat scores of less than 20 (more threatened) were ranked as primary communities.
  - Communities with combined threat scores of 20 or more (up to 29) were categorized as secondary communities.
  - Using this method, if Risk MAP begins in a watershed, primary communities will be studied first and secondary communities will be studied as time and resources allow.

- If a watershed had no primary communities (e.g. only secondary communities), that watershed was removed from the current prioritization and will likely be prioritized at a later date.

Assistance to Environmentally Threatened Communities

In 2019, the State Risk MAP Coordinator developed a new webpage and interactive map on the communities identified as highly vulnerable in the Statewide Threat Assessment:

- Assistance to Environmentally Threatened Communities webpage: https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/EVCs.aspx
- Interactive Map of Environmentally Threatened Communities: http://dcced.maps.arcgis.com/apps/MapSeries/index.html?appid=8cd30ff01c024413bad404154db699c7

The State Risk MAP Coordinator will provide assistance to these communities to help reduce their risk to natural hazards through community planning assistance and the identification of local mitigation projects. While the village of Kotlik is the first of these communities* to be involved in a Risk MAP study, the plan is for more of these communities to participate in Risk MAP in the future.

**Emmonak, identified as a highly vulnerable community, is also an NFIP-participating community which completed Discovery in 2015.*

CHAPTER NINE: RISK MAP STUDY RECOMMENDATIONS

Each year the State of Alaska is asked to provide FEMA with an updated list of the priority Alaskan watersheds recommended for study under FEMA's Risk MAP Program in the next federal fiscal year. ***The Alaska Prioritization and Future Studies Sequencing Decision Support System*** was developed to provide a defensible and fair prioritization of Alaskan watersheds containing NFIP-participating communities.

A new focus of the Risk Map program in Alaska is on imminently-threatened Alaska Native villages. As discussed in Chapters Four and Eight, prioritization of these communities has been based on the results of the ***Alaska Statewide Threat Assessment*** being finalized by the Denali Commission in coordination with the U.S. Army Corps of Engineers Alaska District, the Cold Regions Research and Engineering Laboratory, and the University of Alaska Fairbanks. Identifying watersheds through this process was discussed in Chapter Eight.

The table below identifies the eight HUC-8 watersheds prioritized for future Risk MAP studies.

Table 27: Priority Watersheds for Risk MAP Studies in the Next Several Years

#	HUC-8 Watershed	Alaska Native Villages within Watershed
1	19030502 Kuskokwim Delta	**Primary:** Akiak, Napakiak **Secondary:** Chefornak, Napaskiak, Tuluksak, Tuntutuliak
2	19040805 Yukon Delta	**Primary:** Alakanuk
3	19050104 Nome	**Primary**: Golovin **Secondary:** Nome
4	19050102 Unalakleet	**Primary:** Unalakleet, Saint Michael
5	19050101 Saint Lawrence Island	**Primary:** Savoonga
6	19030403 Takotna River	**Primary:** McGrath
7	19070504 Eagle Creek-Yukon River	**Primary:** Eagle, Circle, Fort Yukon
8	19050202 Goodhope-Spafarief Bay	**Primary:** Deering
9	19090108 Koyukuk Flats - Koyukuk River	**Primary:** Hughes, Huslia
10	19090205 Galena-Yukon River	**Primary:** Galena **Secondary:** Koyukuk

The map on the next page (page 156) shows the locations of these eight watersheds and the primary and secondary communities within each watershed.

In addition to the new focus of Alaska Risk MAP on non-NFIP communities, NFIP-Participating communities will continue to be prioritized for future Risk MAP studies as they identify flood study or risk assessment needs. The State Risk MAP Coordinator and FEMA have begun Pre-Discovery dialogs with both the village of Kotlik and Haines Borough for Risk MAP studies that began in Federal Fiscal Year 2020 (October 1, 2019 - September 30, 2020). Risk MAP meetings with these communities have been delayed due to the COVID-19 pandemic. The village of Akiak and Fairbanks North Star Borough have been tentatively identified for Discovery once the Risk MAP process is underway with Kotlik and the Haines Borough.

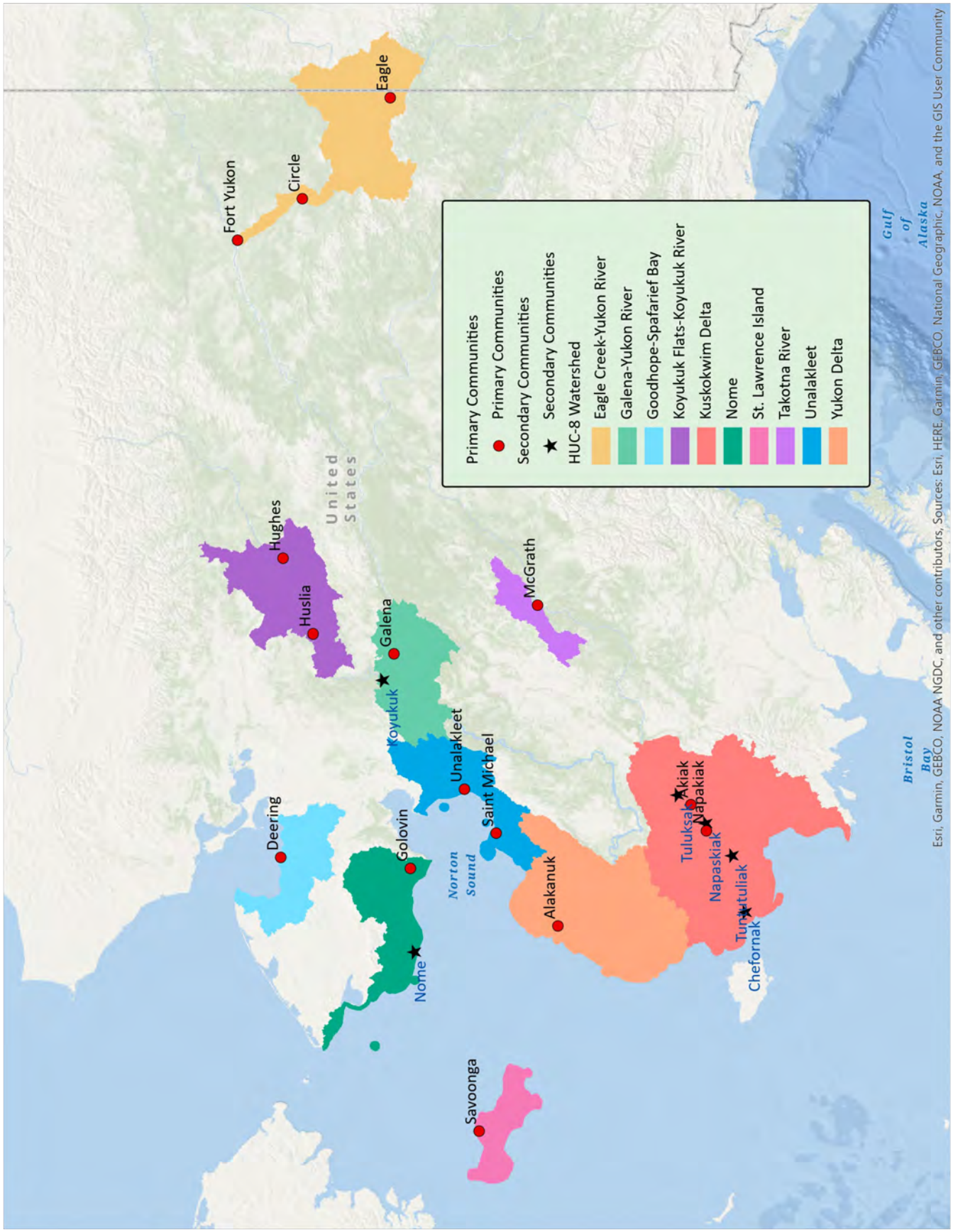


Figure 42: Map of Priority Watersheds and Communities, 2020-2022

CHAPTER TEN: IMPLEMENTING THE STATE OF ALASKA RISK MAP STRATEGY THROUGH SEPTEMBER 30, 2022

Each year, goals are identified to ensure Alaska's Risk MAP Program fulfills its mission to deliver quality hazard data to Alaska's local governments in order to increase public awareness and lead to action that reduces risk to life and property. As the State Risk MAP coordinating agency, DCRA will accomplish the work program from October 1, 2020 through September 30, 2022 by implementing the following tasks:

Program Management + Community Outreach and Mitigation Strategies Statement of Work

Task 1: State Mapping Business Plan Update

Scope: State and Local Business Plans and/or Updates must be submitted for a partner to receive funding for program management in Fiscal Year 2021 (FY 2021). Plans must document the capabilities and accomplishments of the partner; explain the CTP's vision for implementing or participating in Risk MAP, such as describing how the partner's activities advance the vision, goals, and objectives of Risk MAP (including encouraging communities to take action to mitigate risk); include updates from previous years' activities (if applicable); identify flood hazard mapping needs based on physical, climatological, or engineering methodology changes and document these mapping needs to be included in the CNMS GIS data model; and provide recommendations to FEMA regarding future Risk MAP projects within the state or local jurisdiction.

CTPs who also receive an award for the Community Outreach and Mitigation Strategies (COMS) SOW may combine the Business Plan requirements of the PM and COMS awards into a single deliverable, with approval from the FEMA Regional Project Officer.

This SOW combines the Business Plan requirements of the PM and COMS awards into a single deliverable, with approval from the FEMA Regional Project Officer. The combined Business Plan must include all required elements of the PM Business Plan and the COMS Business Plan.

Standards: All State and Local Business Plans and/or Updates work shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer on an annual basis throughout the Period of Performance:

☒	Updated Alaska Mapping Business Plan to include watershed/community prioritization for Risk MAP Projects

Task 2: Global Program Management Activities (Required)

Scope: Program management is the active process of managing multiple related projects that need to meet or exceed predefined performance metrics. Specific metrics are defined on a region-by-region basis, and it is recommended to include and/or reference specific relevant metrics as appropriate in this document. Efforts across a program should be aligned and integrated toward the accomplishment of Risk MAP goals.

PM activities will typically occur in the areas of integration, scope, schedule, cost, quality, human resources (staffing, training, resource enablement), communication, risk, and/or procurement. Some efforts may extend beyond the scope of work defined in the SOW or specific project MAS.

The CTP will work with the FEMA Regional Officer during the initiation of this activity to determine a PM Plan for implementation.

Standards: All Global PM Activities work shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer on an annual basis throughout the Period of Performance:

☒	State Risk MAP Strategy to include anticipated Risk MAP meeting activities, prioritization, and justification (*included in the Alaska Mapping Business Plan)*

Task 3: Strategic Planning for Community Outreach and Engagement

Scope: The CTP will strategically prepare for engagement with communities and stakeholders, to strengthen and focus project discussions towards taking mitigation action to reduce natural hazard risk.

Mitigation action can be encouraged through flood risk and other natural hazards awareness and outreach activities and advanced by proper project management, supporting technical data development, and communications planning throughout the Risk MAP process. There are a range of planning efforts the CTP could undertake to improve community engagement, which could be grouped into a joint planning process, or undertaken individually.

Note: Communication and outreach activities described in this task are meant to be supplemental or complementary efforts to those identified in the Flood Risk Project Mapping Activity Statement (MAS). CTPs and the FEMA Region are responsible for confirming no duplication of effort in other awards (grants, cooperative agreements, interagency agreements and contracts).

Examples include:

Integration Planning – Help state, federal, and local partners coordinate efforts that move communities towards reducing flood risk. For example, convening a variety of stakeholders (who might have diverse goals) and providing tools and knowledge to conduct joint mitigation planning in a watershed.

Awareness and Action Strategy – Develop a regional approach to better understand communities' needs and priorities up front by conducting primary and secondary research on demographics, community communications practices and preferences, evaluation of local plans and initiatives, identification of local decision-makers and potential advocates, mitigation history and potential roadblocks, existing relationships with state and federal agencies, etc.

Community Prioritization – Prioritize the action potential, action readiness, or need of communities within a watershed to inform project scoping and planning.

Watershed and Community Assessment – Assess a watershed and high priority communities to understand their mitigation priorities and their existing relationships with FEMA and other federal agencies to inform future outreach. The assessment may include local planners, floodplain administrators, elected officials, community leaders, local levee/dam/coastal leadership, business owners, residents, participants from other local departments such as public works, and others, based on local needs.

Relationship Management and Action Plan – Evaluate, update, and execute on the relationship plan and mitigation action plan(s). Establish or strengthen relationships between FEMA and local stakeholders.

Standards: All work shall be performed in accordance with the standards specified in Section 4 – Standards. The CTP will coordinate with their FEMA POC to ensure up to date products and templates are used and new products are coordinated and fully reviewed prior to dissemination.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (please click/check the box of the deliverables included in this SOW):

☒	Integrated and strategic plan for advancing relationships with partners and community stakeholders *(included in the Alaska Mapping Business Plan)*
☒	Activities that increase flood risk awareness and subsequent or related mitigation actions
☒	New or updated community profiles that reflect insights gained from community research
☒	Prioritized list of communities, their potential for action readiness within a watershed based on action potential or action readiness, contribution to the action target, and detailed outreach and coordination activities *(included in the Alaska Mapping Business Plan)*
☒	Watershed and community assessment and mitigation action plan for prioritized communities *(included in the Alaska Mapping Business Plan)*
☒	Communication and outreach strategy *(included in the Alaska Mapping Business Plan)*
☒	Update to CTP's website and other digital platforms as needed

Task 4: Global Outreach for Mapping

Scope: The Outreach project or activities for a PM-COMS SOW can best be understood as a process that enhances the understanding of the overall NFIP flood mapping program, including flood risks and hazard identification. This task does not include the Outreach activities for a specific mapping project that begins during the project Discovery phase and continues through the map production and post- preliminary phases.

The overarching goal for outreach is to create a climate of understanding and ownership of the mapping process at the state, tribal, and local levels. Well-planned outreach activities can ensure a more positive interaction throughout the Risk MAP process. These outreach activities can also assist FEMA and other members of the Project Management Team (PMT) in responding to Congressional inquiries. The CTP plans to continue Outreach activities to fulfill its strategy to educate communities on the necessary standards and benefits of developing better flood risk information.

The CTP will work with the FEMA Regional Office during the initiation of this activity to determine or understand the Outreach Plan. The FEMA Regional Office will have access to many outreach tools that have been developed for this process that can be utilized or customized. All communication with local governments will be done in accordance with 44 CFR Part 66.

The Mapping Partner shall notify FEMA and all applicable parties of all meetings with community officials at least two weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor may or may not attend the community meetings.

Standards: All Outreach activities shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (please click/check the box of the deliverables included in this SOW):

☒	Outreach Plan *(included in the Alaska Mapping Business Plan)*
☒	Quarterly report detailing outreach and coordination activities, including backup or supplemental information used in writing the report
☒	Business Plan update describing (in detail) the outreach activities
☒	Updates to CTP's website

Task 5: Meetings and Process Facilitation

Scope: The CTP will hold meetings and facilitate the decision-making processes. The objectives of this task include coordination and follow through for increasing risk awareness, increased regulatory product adoption and acceptance, and mitigation-related activities throughout the Flood Risk Project lifecycle. Meeting activities may include identifying appropriate participants, invitations, planning, presenting, facilitating discussions and completing any associated follow-up. Meeting activities are only allowable if they are not funded under an award for a specific project area outlined in a Flood Risk Project MAS, or the

CTP must provide additional scope to clarify the difference between the funding under the COMS SOW and the MAS for the specific flood risk project. The potential activities included in this task are listed below:

Process Facilitation – Support for implementation of the strategic planning efforts may include: identifying and supporting key community priorities and key influencers; support community identification of mitigation opportunities; gap analysis of community requirements for mitigation implementation; ongoing relationship management; monitoring, evaluation, and update.

Flood Risk Review Meeting – Activities may include planning, presenting, and facilitating discussions of data inputs and engineering models used for flood studies with community officials, with an emphasis on fostering productive discussions based on a shared understanding of flood risk that has been gained through the development of the maps. In addition, draft work maps showing initial study results will be presented during the meeting. The meeting may also include review of mitigation actions and any non-regulatory products if developed during the project, as well as reporting on outreach activities, if applicable. Note: this meeting is included in a COMS scope only if it is not already being done as part of a Flood Risk Project.

Community Consultation Officer's (CCO) Meeting – Activities may include planning, presenting, and facilitating discussions with community officials for awareness and acceptance of regulatory products, as well as reporting on outreach activities, if applicable. The purpose of the meeting will be to review data inputs to a flood study, preview changes to preliminary FIRM data and maps, discuss newly identified flood risk and community actions to reduce risk, and provide information about the appeals period, map adoption, and insurance impacts. The CCO meeting is also an opportunity to deepen relationships with local officials; how community officials convey flood risk to their residents should be a key part of this conversation. Identify if they need support and how to best support them. Note: this meeting is included in a COMS scope only if it is not already being done as part of a Flood Risk Project.

Resilience Meeting – Activities may include the planning, presenting, and facilitation of community discussions related to mitigation plan status, community risks and hazards, local mitigation action opportunities and mitigation best practices, how to identify resources for mitigation projects, as well as reporting on Outreach Activities and Awareness Indictors, if applicable. Note: this meeting is included in a COMS scope only if it is not already being done as part of a Flood Risk Project.

The CTP shall notify FEMA and all applicable parties of all meetings with community officials at least 3 to 6 weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor(s) may or may not attend the community meetings.

The potential (example) meeting activities that may be included in this task are listed below:

Table 28: Potential Risk MAP Meetings Oct. 1, 2020- Sept. 30, 2022 (as of June 2020)					
Watershed/Community	Discovery	FRR	CCO	Public	Resilience
Alaska Native Village (TBD)	X				
Kotlik	X				
Haines Borough	X	X			
Fairbanks					X
Juneau					X
Kenai Peninsula Borough		X	X		
Ketchikan					X
Mat-Su					X
Sitka					X
Valdez					X

Standards: All work shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer:

☒	Key influencers list
☒	Meeting minutes, attendees list, and actions discussed/identified (as needed; provided to FEMA Region within 2 weeks of the meeting).

TASK 6: MITIGATION SUPPORT

Scope: The CTP will leverage Risk MAP data, analyses, products, and/or processes to support communities to advance mitigation actions. Funds cannot be used to update all or part of a Hazard Mitigation Plan but may be used to integrate hazard mitigation concepts into community plans and regulations.

The CTP shall work in close coordination with state and local Emergency Management Offices throughout the life cycle of a Risk MAP project to collect and quantify Actions Identified and Actions Advanced as part of a project specific MAS. Additionally, Actions should be collected throughout the period of performance of this grant for any projects even after the close out of a Risk MAP project. This activity is used to provide for the coordinated effort with local emergency management to communicate with communities outside of the life cycle of the Risk MAP project, extending beyond completion of the project for all watersheds that fall within the Period of Performance of this SOW.

Potential activities include:

Action Identified – Support for communities to identify mitigation opportunities and/or select alternatives through the provision of data and/or analysis. Data is considered new data or aggregation of existing data that is delivered and disseminated in formats readily consumed by the end user. Analysis (i.e., risk assessments; social vulnerability analysis; triple bottom line analysis; and feasibility assessments) may be performed to help identify solutions to identified problems and/or develop requirements for project solutions.

Action Advanced – Support for communities to advance mitigation opportunities including scoping/ design; budgeting; obtaining funding; project planning; technical support for zoning, code, and/or ordinance development; and outreach strategies for project support.

Evaluation and Valuation – Support provided to the community to evaluate and demonstrate the value of the mitigation investment, including calculating economic, environmental and/or social benefits as well as avoided losses from natural hazard events.

Other – Other activities as negotiated with the FEMA Region.

Standards: All work shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (please click/check the box of the deliverables included in this SOW):

☒	Action Identification and Advancement Strategy;

Task 7: Communication and Outreach to Communities

Scope: The CTP will develop, promote and deliver resources and services to communities for risk awareness and mitigation action, such as developing messages and products to implement strategic outreach campaigns. Activities include:

Product Development & Dissemination – Develop and disseminate messages and products that increase flood and other natural hazard risk awareness, such as media materials, social media, website, etc.

Outreach Campaign Implementation – Support the implementation of outreach campaigns in communities such as the High-Water Mark Campaign and Flood Safe.

Other – Other activities as negotiated with the FEMA Region.

Standards: All work shall be performed in accordance with the standards specified in Section 4 – Standards.

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (please click/check the box of the deliverables included in this SOW):

☒	Newly developed messaging and outreach materials that frame flood risk in an accessible way for communities
☒	Report on outreach activities

Task 8: Training and Community Capability Development

Scope: Develop and provide technical training to state, tribal, and local officials throughout the course of a flood risk project (at the discretion of the Regional Office) that promotes awareness and mitigation action. Training can be provided at any time during the flood risk project, and it may be desired to include a series of training activities over the course of a flood risk project.

The CTP must ensure, and must provide documentation when requested by FEMA, that activities funded through this SOW do not replace activities funded under other federal grant programs, such as Hazard Mitigation Planning or Floodplain Management grant programs.

The recipient must identify if the training will be conducted by in-house staff or through contracted services.

Training can be provided at any time during a Risk MAP project, and it may be beneficial to include a series of training activities over the course of a flood risk project. The CTP will coordinate and/or administer training for communities and/or individual groups regarding topics identified by communities. The CTP will:

- Determine target audience;
- Advertise to and confirm training participants;
- Determine training facility;
- Provide training materials;
- Provide training instructors or deliver training;
- Conduct training evaluations
- Provide list of participants and evaluations to FEMA;
- Follow up with participants on unresolved issues.

Activities may include planning, developing, and delivering trainings or direct support in the areas of:

Benefit Cost Analysis (BCA) – Support local, state, and tribal communities to identify, capture, and document the necessary data to run a BCA as well as understand how to run the FEMA approved BCA model. Funds cannot be used to run a benefit cost analysis.

Building Science – Support local, state, and tribal communities in the understanding of construction issues and opportunities in the identified natural hazard and risk areas.

Community Capability Development – Support building community capability to sponsor and implement mitigation actions through activities such as: capability assessment; gap analysis; and process, change, and project management.

Community Rating System (CRS) – How to integrate CRS elements into mitigation plans and floodplain ordinances (public information, mapping and regulation, flood damage reduction, warning, and response).

Community Planning – Support local, state, and tribal communities in the consideration of natural hazards in all relevant areas of community planning, i.e., comprehensive plans, capital improvement plans, stormwater management, etc.

Grant Application Development – Support local, state, and tribal jurisdictions in the development of scopes of work, schedules, and budgets for a successful mitigation activity grant application. Funds may not be used to develop, submit, or execute a grant proposal on behalf of a state, tribe, or local jurisdiction.

Mitigation Planning Technical Assistance – Support local, state, and tribal communities by the creation and dissemination of training and technical assistance for achieving mitigation actions. This task cannot fund an activity that is already funded through another federal grant (including the PM SOW) and should not duplicate assistance available to any community engaged in a Risk MAP Project or a pre- or post-disaster grant funded through the Hazard Mitigation Assistance program. Training can be provided at any time during the Risk MAP project. It may be desired to include a series of training activities over the course of a flood risk project.

Risk Assessment – Support local, state, and tribal communities in the assessment of relative risk for decision support, including HAZUS or other methods. Provide technical assistance on how to use a risk assessment tool.

Risk MAP Data Availability and Tools – Support building community capability to use and understand the regulatory and flood risk components and tools of a Risk MAP project including Flood Risk Products.

Other – Other activities as negotiated with the FEMA Region.

Standards: All activities shall be performed in accordance with the standards specified in Section 4 – Standards.

CTPs must coordinate with the FEMA Regional Project Officer to ensure that any training developed or delivered also complies with regional standards.

Deliverables: For any training conducted, the CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (as needed):

☒	Copies of draft and final training materials
☒	A list of training instructors
☒	A list of all participants and completed course evaluations (such as pre- and post-knowledge surveys) after each training course
☒	Report on outreach activities, if applicable
☒	A description of how training will benefit the public and accomplish the Risk MAP goals of awareness and action.

Task 9: Mitigation Planning Technical Assistance

Scope: Encourage hazard mitigation plan implementation and advance community hazard mitigation actions through technical assistance that supports the Mitigation Planning Process and Risk MAP projects.

Develop and disseminate products and materials to support states, tribes, and local jurisdictions to develop, evaluate, update, and implement their mitigation plans and strategies. Technical Assistance for Mitigation

Planning provided through Risk MAP should focus on building a community's capability to plan for and reduce risk. Technical Assistance should encourage hazard mitigation plan implementation and advance community hazard mitigation actions through the Mitigation Planning Process and Risk MAP projects. The following steps are emphasized:

- Incorporating new flood hazard and risk information;
- Updating and refining mitigation strategies, especially as related to new flood hazard/risk information;
- Training mitigation planning teams;
- Incorporating mitigation into existing community plans, programs, and policies.

This task may be used to provide state and local officials with technical assistance for achieving mitigation actions. This task cannot be used to fund the creation or update of a Hazard Mitigation Plan. This task cannot fund an activity that is already funded through another federal grant (including the COMS SOW) and should not duplicate assistance available to any community engaged in a Risk MAP project or a Hazard Mitigation Assistance (HMA) planning or project grant.

Standards: All Technical Assistance activities shall be performed in accordance with the standards specified in Section 4 – Standards. Coordinate with the FEMA Regional Project Officer to ensure that Technical Assistance also complies with regional standards. Additional information may be available in FEMA's guidance document *Risk MAP Guidance for Incorporating Mitigation Planning Technical Assistance and Training into Flood Risk Projects*.

☒	A report detailing the Technical Assistance provided, including date(s) of Technical Assistance and type of assistance and state, tribal, or local community stakeholders supported
☒	Copies of all technical data provided to local, state, and tribal communities

Deliverables: The CTP shall deliver the following checked item(s) to the FEMA Regional Project Officer (please click/check the box of the deliverables included in this SOW):

Table 29: Deliverables Schedule

Mapping Activity Statement Activities	Deliverable	Deliverable Due Date	Submitted To
State Mapping and Local Business Plans and/or Updates	Alaska Mapping Business Plan (Annual Update)	Summer 2021; Summer 2022	FEMA PO
Global Program Management Activities	State Risk MAP Strategy to include anticipated Risk MAP meeting activities, prioritization, and justification (included in the Alaska Mapping Business Plan)	**Mapping Business Plan:** Summer 2021; Summer 2022	FEMA PO
Strategic Planning for Community Engagement	**Alaska Mapping Business Plan:** 1. Integrated and strategic plan for advancing relationships 2. Prioritized list of communities, their potential for action readiness within a watershed based on action potential or action readiness, contribution to the action target, and detailed outreach and coordination activities; 2. Watershed and community assessment and mitigation action plan for prioritized communities; 3. Communication and outreach strategy **Quarterly Report:** 1. Activities that increase flood risk awareness and subsequent or related mitigation actions 2. New or updated community profiles that reflect insights gained from community research **CTP website:** Update to CTP's website and other digital platforms as needed	**Mapping Business Plan:** Summer 2021; Summer 2022 **Quarterly Report:** on established due dates **CTP website:** FEMA notification within 2 weeks of update	FEMA PO
Global Outreach for Mapping	**In Mapping Business Plan:** 1. Outreach Plan 2. Business Plan update describing (in detail) the outreach activities **Quarterly Report:** 1. Quarterly report detailing outreach and 2. coordination activities, including backup or supplemental information used in writing the report **CTP website:** 1. Updates to CTP's website	**State Mapping Business Plan:** Summer 2021; Summer 2022 **Quarterly Reports**: on established due dates **CTP website:** FEMA notification within 2 weeks of update	FEMA PO

Mapping Activity Statement Activities	Deliverable	Deliverable Due Date	Submitted To
Meetings and Process Facilitation	1. Key influencers (stakeholders) list 2. Meeting minutes, attendees list, and actions discussed/identified	Within 2 weeks of meeting	FEMA PO
Mitigation Support	Action Identification and Advancement Strategy	Quarterly Reports	FEMA PO
Communication and Outreach to Communities	1. Newly developed messaging and outreach materials that frame flood risk in an accessible way for communities 2. Report on outreach activities	Quarterly Reports	FEMA PO
Training and Community Capability Development	1. Copies of draft and final training materials List of training instructors 2. List of all participants and completed course evaluations (such as pre- and post-knowledge surveys) after each training course 3. Report on outreach activities, if applicable 4. Description of how training will benefit the public and accomplish the Risk MAP goals of awareness and action	Within 2 weeks of training	FEMA PO
Mitigation Planning Technical Assistance	1. Report detailing the Technical Assistance provided, including date(s) of Technical Assistance and type of assistance and state, tribal, or local community stakeholders supported 2. Copies of all technical data provided to local, state, and tribal communities	Quarterly Reports	FEMA PO

REFERENCES

Childers, V.A., D.R. Roman, D.A. Smith, and T.M. Diehl. *GRAV-D: NGS Gravity for the Re-definition of the American Vertical Datum Project.* Proc. of First Annual Workshop on Monitoring North American Geoid Change, Boulder, Colorado. U.S. National Geodetic Survey. www.ngs.noaa.gov/grav-d/2009Workshop/Presentations/Childers_US_NGS_GRAV-D.ppt

DCRA. 2009. *Rural Population Report: The Trends are Changing.* State of Alaska Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs (DCRA): Anchorage, AK.

DCRA. 2012. *Alaska Planning Commission Handbook.* State of Alaska Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs (DCRA): Anchorage, Alaska.

Denali Commission. 2007. *Working Together for a Better Alaska: Annual Report 2007*. Denali Commission, an Independent Federal Government Agency.

DHSEM. 2007. *Alaska: All-Hazard Risk Mitigation Plan*. State of Alaska Department of Military and Veteran Affairs, Division of Homeland Security and Emergency Management (DHSEM).

FEMA. 2007. FEMA's *Flood Map Modernization – Preparing for FY09 and Beyond: Integrated Flood Data Update, Risk Assessment, and Mitigation Planning* (Draft Concept Paper). United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2008. FEMA's *Risk MAP Strategy – Integrating Mapping, Assessment, and Mitigation Planning* (Draft Strategy). United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2009. Risk MAP FY09 *Flood Mapping Production Plan*. United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2009. *Risk Mapping, Assessment, and Planning (Risk MAP) Multi-Year Plan: Fiscal Years 2010 – 2014* (Fiscal Year 2009 Report to Congress). United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC. 2009.

FEMA 2009. *Risk Mapping, Assessment, and Planning (Risk MAP): Fiscal Year 2009 Flood Mapping Production Plan* (Version 1.0). United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2011. Discovery Report, FEMA Region X, Cordova Coastal, Alaska. States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2011. Discovery Report, FEMA Region X, Kenai Peninsula Borough, Alaska. United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2011. Discovery Report, FEMA Region X, Kotzebue, Alaska. United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA. 2011. Discovery Report, FEMA Region X, Valdez Project Area, Alaska. United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

FEMA 2019. Notice to Congress: Monthly Update on Flood Mapping. United States Department of Homeland Security, Federal Emergency Management Agency (FEMA): Washington, DC.

Flora, Cornelia and Jan Flora. 1994. "Community Sustainability and Forms of Capital." Department of Sociology, Iowa State University, Ames, IA. Unpublished manuscript.

GAO. 2003. Alaska Native Villages: Most are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance (GAO-04-142). U. S. Government Accountability Office.

GAO. 2009. Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion (GAO-09-551). U. S. Government Accountability Office.

Immediate Action Work Group, Recommendations *Report to the Governor's Subcabinet on Climate Change*, Final Report, April 17, 2008. Anchorage, Alaska.

Langon, Steve. 2002. The Native People of Alaska: Traditional Living in a Northern Land. Anchorage, AK: Greatland Graphics.

Martin, Dan. Modernization of the National Spatial Reference System. Proc. of 2011 Massachusetts Association of Land Surveyors & Civil Engineers, Hyannis, Massachusetts. www.aot.state.vt.us/geodetic/Advisor/Advisordoc/MALSCE_NSRS_10.pdf

Maune, David F., Ph.D., Dewberry. Digital Elevation Model (DEM) Data for the Alaska Statewide Digital Mapping Initiative (SDMI). Proc. of National Geospatial Advisory Committee Meeting, October 15, 2008, Shepherdstown, West Virginia. The Federal Geographic Data Committee. www.fgdc.gov/ngac/meetings/october-2008/dem-data-for-alaska.ppt

Miller, Christy, Steve Barber, and Elizabeth Benson. 2002. State of Alaska: Statewide Flood Hazard Map Modernization Plan. State of Alaska Department of Community and Economic Development, Division of Community and Business Development: Anchorage, AK.

Miller, Christy. 2008. Alaska's Flood Map Modernization Business Plan. State of Alaska Department of Community and Economic Development, Division of Community Advocacy: Anchorage, AK.

Minkel, David. National Geodetic Survey, NOAA. Upcoming Changes to the National Spatial Reference System. Proc. of American Congress on Surveying & Mapping Annual Conference, July 7-12, 2011, San Diego, California.

Morehouse, Thomas, Gerald McBeath, and Linda Leask. 1984. Alaska's Urban and Rural Governments. Lanham, MD: University Press of America.

National Institute of building Sciences. 2017, Natural Hazard Mitigation Saves: 2017 Interim Report.

Oppegard, Erik. JOA Surveys. "NOAA's National Height Modernization and GRAV-D: Putting It All Together." Problems with the Vertical Reference Frame in Alaska. Proc. of Alaska Surveying and Mapping Conference 2010, Anchorage, Alaska. www.ngs.noaa.gov/heightmod/AK20107ProbsWVerticalRefFrameIn0AKOppegard.ppt

Research Needs Work Group, 2009. *Research Needs Work Group Recommendations on Research Needs Necessary to Implement an Alaska Climate Change Strategy.* http://climatechange.alaska.gov/docs/rn_12jun09_dftrpt.pdf

Single Community Districts City and Borough of Juneau, City and Borough of Sitka, City and Borough of Wrangell, City and Borough of Yakutat, Angoon, Bethel, Cordova, Craig, Hoonah, Hydaburg, Kake, Klawock, Nome, Pelican, Petersburg, St Paul, Thorne Bay, Valdez, Whittier, Haines Borough, Municipality of Anchorage, Municipality of Skagway, Bristol Bay Borough.

State of Alaska. Department of Commerce, Community, and Economic Development, Division of Community and Regional Affairs. "Community Mapping", February 2009 (Pamphlet.)

State of Alaska. Department of Military and Veteran Affairs, Division of Homeland Security & Emergency Management, Oct. 2007. Web.

U.S. Army Corps of Engineers, Alaska District, Civil Works Floodplain Management Services Web Site. Web. www.poa.usace.army.mil/About/Offices/Engineering/FloodplainManagement.aspx

U.S. Department of Homeland Security. Federal Emergency Management Agency, "The National Flood Insurance Program" 14-May-2010 500 C Street SW, Washington, D.C. 20472 www.fema.gov/national-flood-insurance-program • www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/map-modernization