McGrath, Alaska

Multi-Jurisdictional Hazard Mitigation Plan

2018

Photo courtesy of City of McGrath

Prepared by

Ecology & Enironment for City of McGrath and the Native Village of McGrath

October 2017, Revised April 2018

Plan Administration

The McGrath Hazard Mitigation Plan Update 2017, including appendices, is updated every five years, after a disaster response, or as appropriate in response to community mitigation activities. This Hazard Mitigation Plan (HMP) Update has been formally re-promulgated by the City of McGrath and the McGrath Native Village and sent to the State of Alaska Division of Homeland Security and Emergency Management (DHS&EM) for review and the Federal Emergency Management Agency (FEMA) for approval every five years.

Record of Plan Changes

All updates and revisions to the plan will be tracked and recorded in the following table. This process will ensure that the most recent version of the plan is disseminated and implemented as appropriate.

Date	Change No.	Purpose of Update
2010	Original Release	
2017	Update	

Plan Distribution List

Copies of this HMP Update will be provided to the following communities, agencies, and persons. Updates will be provided when available. Recipients will be responsible for updating their respective HMP copies when they receive changes. The City administrator is ultimately responsible for dissemination of all plan updates.

Date	No. of Copies	Community/Agency/Person
		City of McGrath
		McGrath Native Village
		Denali Commission
		Alaska Department of Military and Veterans Affairs/Division of Homeland Security and Emergency Management
		Federal Emergency Management Agency

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1 Introduction

Historically, communities and regions within the state of Alaska have been impacted from natural hazard events, and many of these events have devastated homes and other vital infrastructure, resulting in injuries or death in the aftermath of the event. Costs to repair, rebuild, or to replace homes, critical facilities, and infrastructure, particularly in remote Alaska communities are staggering. One proven way to minimize these costs is for communities to develop a Hazard Mitigation Plan (HMP). Throughout the HMP process, communities work with other local partners, stakeholders, individuals within the communities, state, and federal planning partners. Section 1.4 of this plan provides a list of FEMA hazard mitigation assistance programs that provide funding support for a community to pursue mitigation projects that were listed during development of their HMP or HMP Update.

The HMP creates a framework for identifying hazards, vulnerabilities and determining a community's priorities "to reduce or eliminate long-term risk to human life and property from natural hazards." (44 CFR, Part 201.2) This plan is designed to fulfill the requirements set forth in the 44 Code of Federal Regulations (CFR) 201.4 Disaster Mitigation Act 2000 (DMA 2000) to identify hazards facing the community, to complete a risk assessment and vulnerability analysis, and to identify and coordinate mitigation efforts with State, Federal, and local partners. Specifically, this HMP describes the planning process and methodology used; introduces the community and its location and unique characteristics that make up the community and its people; identifies unique hazards the community faces; assesses the vulnerabilities of the community to these hazards; and puts forth sustainable mitigation strategies to create a more resilient community.

The McGrath HMP Update represents the City of McGrath and the McGrath Native Village. Since both jurisdictions are recognized within the planning effort, this plan is considered a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This MJHMP provides documentation of the planning process and how hazard mitigation resources have been organized (Sections 1 and 2); provides a profile of the community (Section 3); characterization of natural hazards and a risk assessment (Section 4); a capability assessment of funding sources and resources (Section 5); introduction of goals and strategies (Section 6); a maintenance plan for the MJHMP, including plan adoption, monitoring, evaluating, and updating the MJHMP (Section 7); and references for the MJHMP (Section 8).

1.1 Hazard Mitigation Planning

The DMA 2000 highlights the importance of mitigation planning and emphasizes planning for disasters before they occur. This act provides funding for mitigation planning and projects. Mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to, and the capabilities of, the individual communities.

1.2 The Planning Process Tasks

Hazard mitigation planning, whether developing a plan for the first time or a plan update, is implemented in a series of tasks. The figure below, based on FEMA's handbook illustrates these tasks.

Figure 2-1 FEMA Recommended Mitigation Planning Tasks

Source: FEMA Local Mitigation Planning Handbook, March 2013

1.3 Authorities

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Title 42 of the United States Code 5121 et seq. Section 322, provides the legal basis for FEMA mitigation plan requirements as a precondition for receiving FEMA mitigation project grants. The Disaster Mitigation Act of 2000 (DMA 2000), Title 44 of the Code of Federal Regulations (CFR), Part 201, amends the Stafford act by establishing mitigation planning requirements that emphasize the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. Other state, regional and national programs may also reference the community's HMP as a funding condition. Table 1-1 identifies applicable legal authorities and other planning documents that support the HMP.

Table 1-1 Legal Authorities and Other Supporting Documents

▪ Federal
▪ Disaster Mitigation Act 2000, PL 106-390 ▪ Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707 ▪ Code of Federal Regulations, Part 201. ▪ National Flood Insurance Act of 1968, 42 USC 4104c, as amended by the National Flood Insurance Reform Act of 1944, Public Law 103-325 ▪ The Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Public Law 108-264
▪ State
▪ State of Alaska Hazard Mitigation Plan, October 2010 ▪ Alaska Statute 26.23, Department of Military and Veterans Affairs, Disasters
▪ Local Supporting Plans
▪ 2007 McGrath Hazard Mitigation Plan (FEMA approved in 2009)
▪ McGrath Community Plan 2013, McGrath Native Village Council
▪ 2015 McGrath HMP Update (not approved by FEMA)

For more information regarding FEMA planning process, hazard identification and risk assessment, and mitigation strategy requirements, refer to Appendix 7. The appendix also details those sections within the HMP that document how each of these requirements has been satisfied.

1.4 Hazard Mitigation Assistance (HMA) Programs

FEMA's Hazard Mitigation Assistance (HMA) Guidance introduces three primary programs that provide funding for eligible mitigation planning and mitigation projects to reduce disaster losses and to protect life and property from future disaster damages. The three HMA programs are the Hazard

Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program. The application cycles for these programs are announced via http://www.grants.gov/.

- HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential major disaster declaration.
- FMA provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis. FMA facilitates Severe Repetitive Loss (SRL) and Repetitive Flood Claim (RFC) programs.
- PDM provides funds for hazard mitigation planning and projects on an annual basis.

The HMA grant programs provide funding to States, Tribes, and local entities that have a FEMA-approved State, Tribal, or Local HMPs. The HMGP and the PDM grants are authorized under the Stafford Act and DMA 2000, while the FMA is authorized under the National Flood Insurance Act. The HMGP is a directly-funded competitive disaster grant program. The PDM and FMA programs, also competitive, rely on specific pre-disaster grant funding sources, sharing several common elements. Each of the HMA programs have a percentage of Federal/non-Federal cost-share requirements. For further information regarding the HMGP, PDM, and FMA Programs, refer to Appendix 7.

FEMA has issued several policies that facilitate the mitigation of adverse effects from climate change on the built environment, structures and infrastructure. Recognizing that the risk of disaster is increasing because of multiple factors, including the growth of population in and near high-risk areas, aging infrastructure, and climate change, FEMA promotes climate change adaptation as discussed in Section **4.3.7.**

2 Planning Process

The State of Alaska Division of Homeland Security and Emergency Management, secured a contractor to began working with the City of McGrath in June 2017 to organize resources and help begin the planning process for updating the 2007 McGrath HMP. The initial 2007 McGrath HMP, which was implemented by the City of McGrath and not the McGrath Native Village, received approval following formal adoption by the City Council, Resolution 09-08, dated January 27, 2009. Final FEMA approval was February 2, 2009. The subsequent update for the HMP was developed as a MJHMP, with involvement by both the City of McGrath and McGrath Native Village.

Beginning with phone calls and emails, the contractor encouraged the City of McGrath to review FEMA resources including guidance documents and sources of HMP on-line training for the local Planning Committee. The City Administrator, Sarah McClellan, was the point of contact in the community for E & E staff, and has coordinated the efforts of the HMP Planning Team. The Planning Team, made up of the local Planning Committee and working with regional, state, and other stakeholders, is described in Section 2.1.

The planning area is based on the initial McGrath HMP 2007 and a 2015 Draft MJHMP Update, which did not receive FEMA approval. Aerial maps illustrate the planning area and are used to focus on vulnerabilities within the approximately 1.1 square miles area that accounts for the city and the Native Village of McGrath land.

A primary resource for beginning the planning process has been the FEMA Local Mitigation Planning Handbook, March 2013, and FEMA's Hazard Mitigation Planning Frequently Asked Questions (FAQ). Other FEMA documents are available for guidance on specific topics associated with the HMP. Appendix 7 of this HMP Update is a compilation of supporting documentation and material referenced for developing this HMP Update.

The McGrath MJHMP Update 2017 also provides documentation to the State of Alaska HMP (scheduled for formal update in 2018). The State of Alaska also makes local planning and community infrastructure documents available online, which have been used in coordination with this HMP Update. The State of Alaska Division of Community and Regional Affairs, Planning and Land Management Section, provides an online Community Plans Library and a Community Infrastructure Library. Section 2.3 provides details of the extent of coordination and incorporation of other planning efforts with this MJHMP Update.

2.1 Planning Team

The Planning Team consists of a local Planning Committee working with Coordinating Partners and Stakeholders to include local organizations, programs and businesses; regional organizations such as regional health corporations, native associations, etc.; and State and Federal agencies responsible for review, approval and funding to implement the MJHMP. The Planning Team will be the primary source of data and information needed to maintain the MJHMP.

2.1.1 Local Planning Committee

The Planning Committee is responsible for initiating and maintaining the MJHMP strategy and coordinating with the greater planning team.

The Planning Committee that originally developed the 2007 McGrath HMP was re-convened to work on this 2017 update. Upon initiating the planning process for this MJHMP Update, the contractor encouraged the Planning Committee to access the McGrath HMP 2007 and to review the mitigation

strategy sections in order to discuss progress relative to the mitigation goals that were developed in 2007.

Table 2-1 McGrath HMP Planning Committee

Name	Title	Organization	Key Input
Gina McKindy	Tribal Administrator	McGrath Native Village Council	Planning Team Member
Sarah McClellan	City Administrator	City of McGrath	Planning Team Member, data input and HMP review
Craig Losby	Mayor	City of McGrath	Planning Team Lead, data input and HMP review
Kim Wortman	Clerk & Treasurer	City of McGrath	Planning Team Member, data input and HMP review
Steffen Strick	Emergency Operations Council Member	City of McGrath	Planning Team Member, data input and HMP review
Mansey Magnunson	Emergency Operations	City of McGrath	Planning Team Member, data input and HMP review
Holly Gibbens	Medical Leader	City of McGrath	Planning Team Member, data input and HMP review
Mark Cox	Emergency Logistics	City of McGrath	Planning Team Member, data input and HMP review
Tim Barnum	City Light & Power	City of McGrath	Planning Team Member, Data input, and HMP review
Chris Fredericks	City Water	City of McGrath	Planning Team Member, data input and HMP review
Mike Tierney	Planning Commission	City of McGrath	Planning Team Member, data input and HMP review
Robert Magnuson, Jr.	Planning Commission Council Member	City of McGrath	Planning Team Member, data input and HMP review
Ralph Morgan	Council Member (Mayor in 2018)	City of McGrath	Planning Team Member, data input and HMP review
Barbara Deardorff	Council Member	City of McGrath	Planning Team Member, data input and HMP review.
Zeb Vanderpool	Council Member	City of McGrath	Planning Team Member, data input and HMP review

Name	Title	Organization	Key Input
Alice Dale	First Chief	Village of McGrath	Planning Team Member, data input and HMP review
Tom Parker	Public Works Director	City of McGrath	
Chris Huff	Vice Mayor	City of McGrath	Planning Team Member, data input and HMP review

2.1.2 Coordinating Partners and Stakeholders

The Planning Committee includes representatives from Local, Regional, State, and Federal organizations, and these Coordinating Partners include stakeholders that may be directly impacted by the hazard mitigation plan, and others able to provide resources or share data.

Table 2-2 Coordinating Partners and Stakeholders

Local Organizations	Contact Name	Phone	Email
McGrath Native Village Council	Gina McKindy	(907) 524-3024	Gina.McKindy@TananaChiefs.org
City of McGrath	Sarah McClellan	(907) 524-3825	Administrator@cityofmcgrath.org
McGrath Light and Power	Tim Barnum	907-524-3390	tbarnum@mtnt.net
McGrath Regional Health Center	Holly Gibbens	907-524-3299	hgibbens@southcentralfoundation.com
MTNT, Limited Village Corporation	Kevin Whitworth	907-524-3390	kevin.whitworth@mtmt.net
McGrath School	Matt Shelborne	907-524-1200	mshelborne@iditarodsd.org
McGrath Volunteer Fire Department	Mansey Magnunson	(907) 524-3825	robertlmagnuson@hotmail.com
Alaska State Trooper - McGrath Post	Brett Gibbens	(907) 675-4398	brett.gibbens@alaska.gov
KSKO Radio	Ralph Morgan	907-524-3436	Ralphmorgan1946@gmail.com

Regional or State-Wide Organizations	Contact Name	Phone	Address
Alaska State Trooper	Dispatch	(907)675-4398	PO Box 36 McGrath, AK 99627
Doyon Native Regional Corporation	Charlene Ostbloom	907-459-2000	info@doyon.com
Alaska Native Tribal Consortium (ANTHC) Grant Writers	Melodie Fair, Grant Writter Max Neale, Grant Writter	(907) 729-2418	MDFair@ANTHC.org MDNeale@ANTHC.org
Iditarod Area School District	Connie Newman, Superintendent	(907) 524-1200	cnewman@iditarodsd.org
Village Safe Water Program	George Wilson, Project Manager	(907) 269-7610	george.wilson@alaska.gov
ANTHC Community Environment and Health	Emergency Preparedness Office	(907) 729-4427	ceh@anthc.org
U.S. Army Corp of Engineers	Wendy Shaw, P.E.	(907) 223-6895	POA.Floodplain@usace.army.mil
AK Dept. of Natural Resources	Mark Cox	907-524-3010	mark.cox@alaska.gov
Steffen Strick	DOT	907-524-3241	steffen.strick@alaska.gov

2.2 Public Involvement

2.2.1 Original 2007 McGrath HMP

The City of McGrath developed their initial HMP in 2007 (approved by FEMA in 2009) with assistance from the State of Alaska, Division of Homeland Security and Emergency Management (DHS&EM). The public and interested stakeholders were solicited for:

1. Community demographic, land use and economic information.
2. A review of the local hazards facing the community.
3. A hazard vulnerability assessment.
4. A hazard mitigation strategy with attainable goals and actions.
5. A list of incorporated planning documents.

2.2.2 2015 McGrath MJHMP Update

The City and McGrath Native Village Councils held an MJHMP Update meeting on April 22, 2015 as part of their regular public council meeting. They advertised the meeting through the local radio station and posted newsletters. DSH&EM posted a copy of the newsletter on their website and

solicited the State Hazard Mitigation Advisory Council (SHMAC), Disaster Policy Cabinet (DPC), and general public comment, http://ready.alaska.gov/plans/localhazmitplans. Please note that this newsletter is no longer available on the website. During the 2015 public meeting, the City and Native Village Councils organized their planning team, recorded public comments, identified hazards, resources, capabilities, and set the date for their next public meeting. The planning team was tasked with gathering information and soliciting public input.

They also briefly discussed the hazards identified in their current MJHMP and added Climate Change as a hazard:

1. Earthquake
2. Erosion
3. Flood
4. Subsidence
5. Severe Weather
6. Wildland Fire
7. Climate Change

2.2.3 2017 McGrath MJHMP Update

As part of an outreach effort to gather input for the planning process, E & E provided a questionnaire to the Planning Committee and encouraged them to distribute the questionnaire to members of the community. Direct feedback from the questionnaire was limited to only one response; however, the questionnaire prompted discussion about the MJHMP Update process and expected outcomes. A copy of the questionnaire is provided in Appendix 3.

The City Administrator scheduled a public meeting on Thursday, July 24, 2017. Ms. McClellan notified members of the Planning Committee and posted a public notice at the City office and on McGrath's internet community message board. KSKO announced the meeting on the local radio broadcast station and on citizen band radio channels. The Planning Committee decided to hold two meetings to allow more opportunity for the community to participate. Therefore, both meetings occurred on July 24, with one meeting at 2:00 p.m. and a second one at 7:00 p.m.

Two contractor planners traveled to the community to assist in facilitating the public meetings. A copy of the sign-in sheet and the public announcement provided by the City Council are included in Appendix 2. Members of the Planning Committee and the public attended the meetings. There were about 15 McGrath residents in attendance; participation was good; and each meeting lasted about two hours.

Meeting attendees identified local hazards to be addressed in the MJHMP, based on discussion of the hazards identified in the Draft 2015 MJHMP Update, the 2015 Mitigation goals and potential actions, and developments since the Draft 2015 MJHMP Update was written. It was agreed that the 2017 MJHMP Update should primarily address riverbank erosion and wildfire.

Following review of the planning process and tables from the 2015 MJHMP Update, the community identified the following as hazards ranked here based on perceived risk:

1. Flooding
2. Erosion
3. Wildfire
4. Severe weather
5. Subsidence/Permafrost Degradation
6. Earthquake
7. Climate Change
8. Drought

Profiles of hazards are provided in Section 4 – Risk Assessment.

2.2.4 Summary of Significant Comments

The following is a summary of the significant comments from the July 24, 2017 public meeting.

AK Department of Natural Resources, Division of Forestry, working with MTNT Ltd., is executing a wildland fire mitigation project installing fire breaks. The fire break project has planned 3 stages of which stage 1 is complete and stage 2 is underway.

The City of McGrath recently installed 45 yd^3 of river bank armoring.

Survey work has been done by NRCS to install flow control "barbs" [low dikes or sill-like structures that extend from the bank towards the stream in an upstream direction] to mitigate riverine erosion. Not sure of the status of design or construction funding.

Individuals are encouraged to build or elevate homes above the recommended flood elevation of 340'. Education on this point is preferred over regulations or enforcement.

Permafrost degradation has not been a significant problem. Surprised it is listed as high as it is in the HMP.

One structure has been relocated. Challenge is siting the new location, as it is now on City property[1].

Stream gage is measured manually to qualify flood elevation for reporting to barges. It is an inexact measure.

Access road around the airstrip needs repair and protection from erosion.

McGrath is the only fire retardant air base in the region.

McGrath holds an annual public meeting – Flood Meeting – contact info gets updated.

McGrath uses the Incident Command System (ICS) in emergency response and a Small Community Emergency Response Plan (SCERP) is being developed.

Winter travel on the river has become more dangerous due to less ice formation.

Earthquake isn't a big issue (some recall 2005 Denali fault quake).

More winds than usual lately.

2.3 Incorporation of Existing Plans

Plans available on the State of Alaska Division of Community and Regional Affairs (DCRA) Community Plans and Infrastructure Library have been considered during this hazard mitigation planning update. The following documents were reviewed for coordination with the McGrath 2018 MJHMP Update:

[1] The City Administrator identified the structure as the Sonny Holmberg property.

- U.S. Army Corps of Engineers Alaska Baseline Erosion Assessment 2009
- State of Alaska Hazard Mitigation Plan 2013
- McGrath Community Strategic Plan, June 2003
- The City of McGrath Flood and All Hazards Mitigation Plan, December 2007
- McGrath Community Plan 2013, McGrath Native Village Council[2]
- McGrath Draft Multi-Jurisdictional All Hazards Mitigation Plan, July 2015 (Note: This plan was not approved by FEMA)
- McGrath Wastewater Collection & Treatment Preliminary Engineering Report, August 2017
- FEMA Flood Insurance Study #020128V000A McGrath, Alaska, November 2011

Coordination with regional and statewide organizations is necessary to identify and incorporate other infrastructure planning and land use developments that could impact McGrath. Coordination of planning needs to be an ongoing effort to maintain an effective mitigation strategy for the community. This is discussed further in Section 8 Plan Maintenance.

The Indian Health Service (IHS) maintains a database of proposed sanitation capital improvement projects (IHS, 2017). The identified sanitation deficiencies and proposed projects are described in Appendix 6.

2.4 Plan Maintenance

In addition to the required five year update in accordance with DMA 2000, it is recommended that the Planning Committee, working with coordinating organizations, annually review the MJHMP. The MJHMP should be considered a living document to be referenced and annotated as needed. Section 7 of this document provides details on Plan Maintenance and Implementation, and additional resources in Appendix 1.

Progress to advance the community's mitigation strategy is reflected in this McGrath 2018 MJHMP Update. The Planning Committee is responsible for regularly referencing the MJHMP document as a means of monitoring, evaluating and updating the MJHMP as mitigation projects and other community developments are implemented. Active maintenance of this plan is a necessary element of the hazard mitigation strategy.

2.4.1 Review and Technical Assistance

Draft local hazard mitigation plans are submitted to the State Hazard Mitigation Officer (SHMO) for review. The SHMO reviews the plan for consistency with the State HMP and the Disaster Mitigation Act of 2000 (DMA 2000) regulations. The primary guidance is the FEMA Local Mitigation Plan Review Guide, Oct 2011. The State assists the community with any necessary revisions and then forwards the plan to FEMA Region 10 for final review.

2.4.2 Approval

Following a final review, if no further revisions are necessary, FEMA issues an "Approvable Pending Adoption" (APA) letter to the Planning Committee.

Following review by the State and approval by FEMA, this 2018 MJHMP Update will be formally adopted by the City of McGrath and the McGrath Native Village Council. Once the plan is adopted, the SHMO forwards a copy of the adoption resolution to FEMA Region 10 for final approval as a FEMA Multi-Jurisdictional Hazard Mitigation Plan. FEMA sends the final approval letter to the

[2] Funding for this plan was provided by the Tanana Chiefs Conference to the McGrath Native Village Council.

Planning Committee and the State for their records. Finally, the SHMO places a copy of the FEMA-approved MJHMP in the State's files and on the State web site for reference.

2.4.3 Implementation

The McGrath City Council and McGrath Native Village Council support 44 CFR 201 and assures compliance with all applicable federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plan whenever necessary to reflect changes in tribal or federal laws and statutes as required in 44 CFR 13.11(d). The City of McGrath and McGrath Native Village, with assistance from the State Hazard Mitigation Officer (SHMO), the State Hazard Mitigation Advisory Committee (SHMAC), and FEMA, is responsible for monitoring, evaluating, and updating their MJHMP in accordance with 44 CFR§201.6 and §201.7.

The Planning Committee is responsible for implementing this MJHMP Update. Procuring funding, scheduling mitigation projects, and communicating progress are some of the actions necessary for the planning team to be successful in implementing this MJHMP Update.

The City Council is actively seeking State mitigation project funds to complete a riverbank stabilization project initiated by NRCS. When FEMA approves this MJHMP Update, the City intends to apply for mitigation project grants or other public assistance to relocate some structures away from the eroding riverbank. FEMA mitigation grant programs include:

- Hazard Mitigation Grant Program (HMGP)
- Individual Assistance (IA)
- Public Assistance (PA)
- Small Business Association Loan Program (SBA)

2.4.4 Monitoring Evaluating and Updating

The Planning Committee will be responsible for monitoring the programs and projects that implement the hazard mitigation strategy. Information about the progress and completion of mitigation actions should be documented and evaluated. Monitoring and evaluating the mitigation efforts will provide the necessary content for regular, periodic updates the MJHMP.

The Planning Committee should evaluate the outcomes of each mitigation action in order demonstrate progress in implementing the mitigation strategy. Evaluation criteria should be defined by the mitigation program or project being implemented, and could be adopted from related projects or programs.

The McGrath MJHMP Update, including appendices, will be updated every five years, after a disaster response, or as appropriate in response to community mitigation activities, changes to land use development and changes to critical infrastructure. The MJHMP will be formally re-promulgated by the Community and sent to the State of Alaska DHS&EM for review and FEMA for approval once every five years.

3 Community Profile

3.1 Planning Area

This section describes the location, geography, and history; demographics; and land use development trends of McGrath as reported by the State of Alaska. The Planning Committee, working with the community and the rest of the planning team, will be responsible for further defining the planning area. The tribal lands are located within the city linits. Community public information about McGrath was accessed at the State of Alaska, Division of Community and Regional Affairs Community Database Online site for McGrath.

McGrath is in Alaska's State Senate District S, State House District 37, and State Judicial District 4.

Location and history information has not changed for the 2018 McGrath MJHMP Update. Some changes to the geography are observed as a result of erosion. Updates to demographic and development trends related to the Planning Area are provided in the MJHMP, as are updated imaging and mapping.

3.1.1 Location and Geography

McGrath (pronounced muh grath') is a 2nd Class City in the Yukon-Koyukuk Census Area. McGrath is located 221 miles northwest of Anchorage and 269 miles southwest of Fairbanks in Interior region of Alaska. It is adjacent to the Kuskokwim River, directly south of its confluence with the Takotna River. McGrath covers approximately 48.9 square land miles and approximately 5.70 square miles of water. It lies at approximately 62.9534 North Latitude and 155.5961West Longitude. (Sec. 18, 033N, 033, Seward Meridian). The State of Alaska Department of Community, Commerce, and Economic Development makes available community mapping for McGrath. (Alaska, Community Information, 2017)

McGrath lies within the continental climate zone, characterized by extreme temperature differentials. The continental climate zone encompasses the central portion of the state and is characterized by extremely cold winters and warm summers. The Kuskokwim River is mostly ice-free from June through October. Figure 3-1 is an aerial photograph that depicts the city's proximity to the Kuskokwim River.

McGrath's temperatures range from a winter low of -40 degrees Fahrenheit (ºF) to above 70ºF during the summer with an extreme low of -64ºF. The area receives approximately 12.7 inches of rain annually and 60 inches of snow.

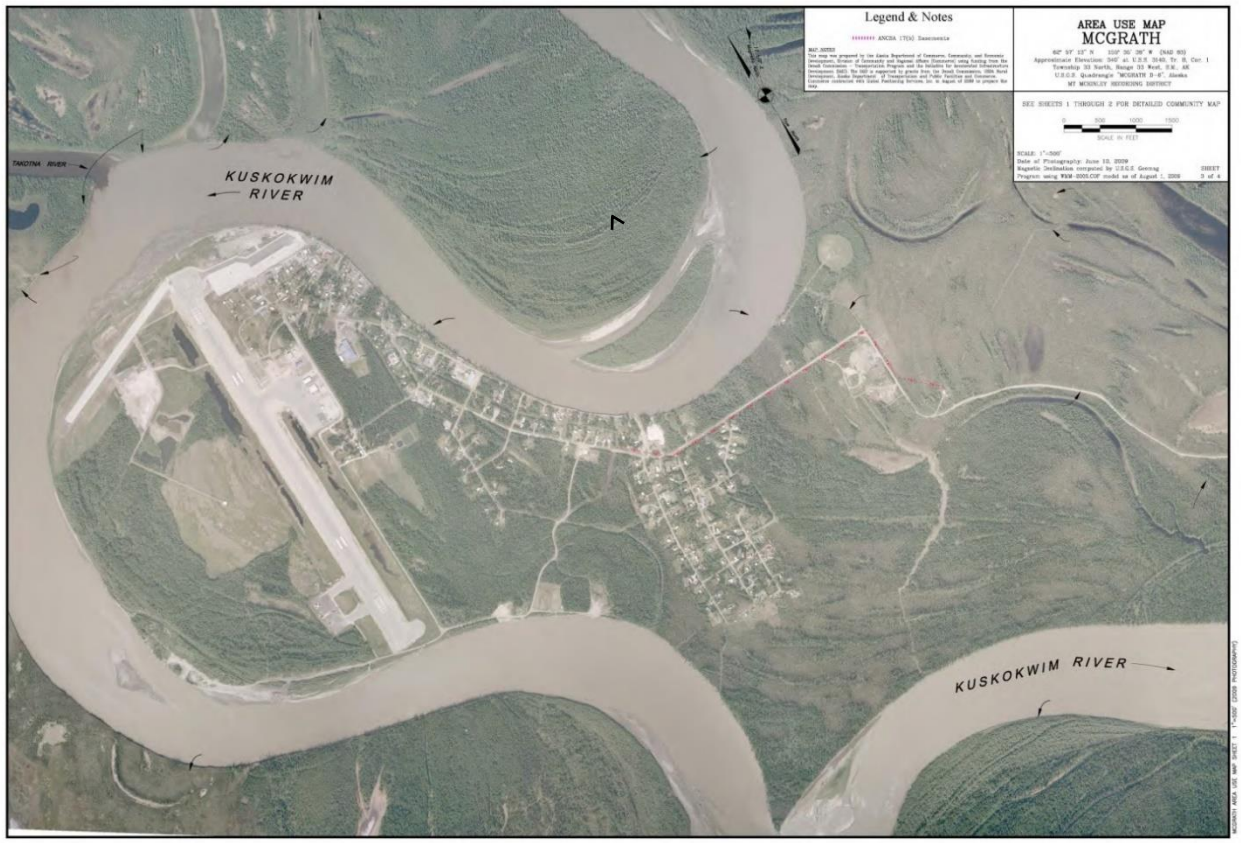


Figure 3-1 McGrath Aerial Image (Source: 2007 DCRA Community Profile Project)

3.1.2 History and Culture

McGrath began as a temporary seasonal Upper Kuskokwim Athabascan meeting and trading village for Big River, Nikolai, Telida, and Lake Minchumina residents. The Old Town McGrath site was situated across the river from its current location. More than half the population is descendant of Athabascan and Eskimo. Subsistence is a vital part of the local culture.

Several key events occurred throughout the City of McGrath's developmental history:

- 1904, Abraham Appel established a trading post at the old site.
- 1906-07, Gold was discovered nearby in the Innoko District and Ganes Creek.
- 1907, Townsite named for Peter McGrath was established.
- 1909, The Alaska Commercial Company opened a store.
- 1911-1920, McGrath flourished as a supply center for gold miners.
- 1930, Kuskokwim River floods and changes course.
- 1930-1937, Community relocates to its present location.
- 1940-45, McGrath is a WWII refueling stop as part of the Lend-Lease Program.
- 1975, The City of McGrath incorporates.
- 1993, McGrath Native Village is established and federally recognized as Native Village of McGrath.[3]

3.1.3 Demographics

The 2010 census recorded 346 residents, of which the median age was 39.8. The population of McGrath is not expected to grow at the same or accelerated rate because the population is older than 35 years of age.

The male and female composition is approximately 52.0 and 48.0 percent respectively. The 2010 census revealed that there are 195 housing units and 0% vacancy, with an average household size of 2.35. The most recent 2018 Department of Labor and Workforce Development estimated population is 295[4].

Year	Population
2010	346
2011	339
2012	342
2013	320
2014	316
2015	327
2016	302

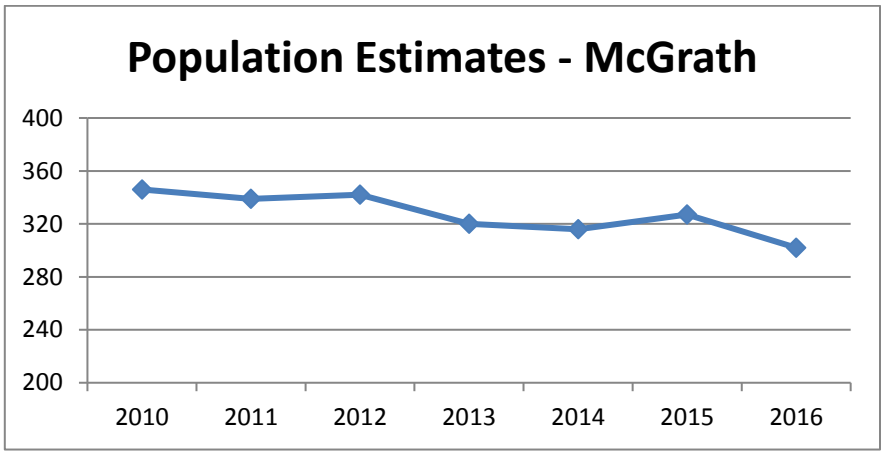


Figure 3-2 Population Data – Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section.

3.1.4 Economy

The major employers in McGrath are Federal, State (DOT), City, MTNT Ltd[5] village corporation, and Tribal governments. Additionally, the Iditarod Area School District, air transportation, AC Store, and seasonal construction, also provide employment opportunities. The Alaska Department of Natural Resources maintains a wildland firefighting base in McGrath, providing seasonal employment. **Figure 3-3** provides worker characteristics and **Figure 3-4** illustrates local jobs for workers by industry.

[3] *Source:* (Alaska, Community Information, 2017)
[4] Reported by S. McClellan, March 27, 2018.
[5] MTNT Ltd represents the following communities: McGrath, Takotna, Nikolai, and Telida.

It should be noted that during the March 27 meeting, both administrators for the City and McGrath Native Village made corrections to the numbers for Figure 3-4.

Trade, Transportation, and Utilities	**MTNT (electric service) = 3**
Local Government	**City= 6 (water, sewer, and electric)** **McGrath Native Village= 5**

Worker Characteristics	2016
Residents age 16 and over	221
Residents employed	136
Female workers	73
Male workers	63
Workers age 45 and over	63
Workers age 50 and over	51
Total wages	$4,986,783
Sector employed in	
Private	73
Local government	47
State government	16
Peak quarterly employment	123
Workers employed all 4 quarters	83
New hires	49
Unemployment insurance claimants	27

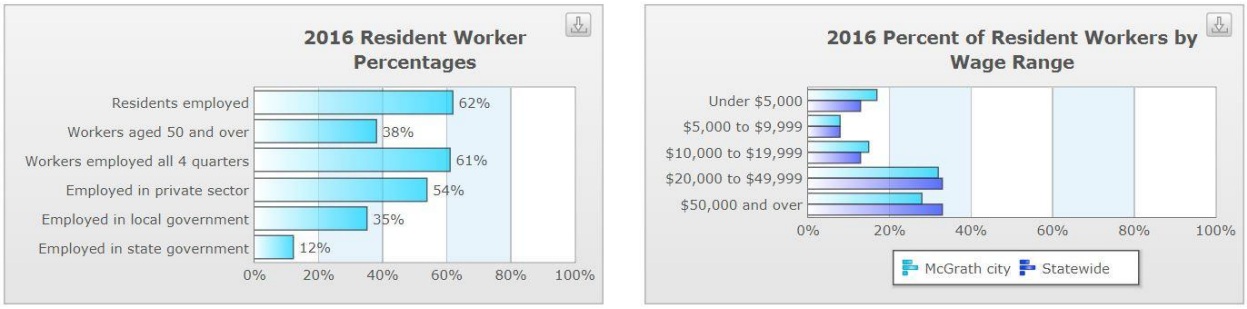


Figure 3-3 Worker Characteristics Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section. Last updated September 2016.

2016 Workers by Industry

	Number of workers	Percent of total employed	Female	Male	Age 45 and over	Age 50 and over
Natural Resources and Mining	3	2.2	0	3	0	0
Construction	6	4.4	2	4	2	1
Trade, Transportation and Utilities	25	18.4	8	17	11	7
Information	5	3.7	3	2	1	1
Professional and Business Services	7	5.1	5	2	4	4
Educational and Health Services	17	12.5	13	4	8	6
Leisure and Hospitality	7	5.1	7	0	0	0
State Government	16	11.8	6	10	11	8
Local Government	47	34.6	28	19	25	23
Other	3	2.2	1	2	1	1

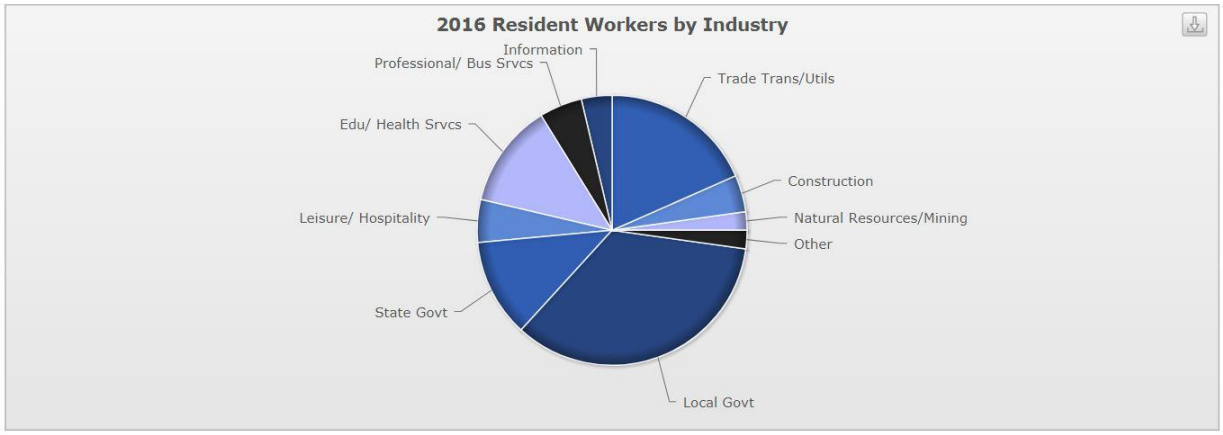


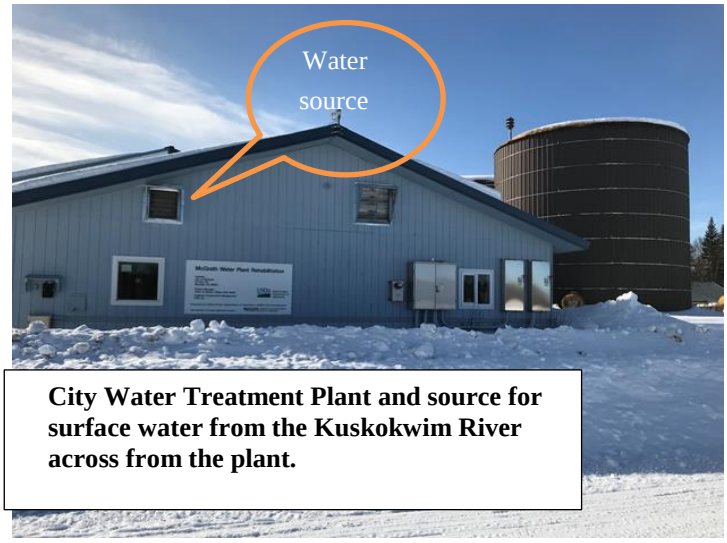
Figure 3-4 Worker Data by Industry Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section. Last updated September 2017.

According to the US Census Bureau's 2011 – 2015 American Community Survey 5-Year Estimates, the median household income in McGrath was $64,792. In 2010 approximately 65 individuals or 14.5 percent were reported to be living below the poverty level. The potential work force for those aged 16 years or older was estimated to be 236, of which 153 were actively employed. For the 2013 calendar year, the average unemployment rate in the Yukon-Koyukuk Census Area was 18.2 percent; however, this rate included part-time and seasonal jobs, and practical unemployment or underemployment is likely to be significantly higher. (U.S.Census, American Fact Finder, 2015).

3.1.5 Infrastructure

McGrath has a 5,936-foot public asphalt paved runway owned by the State of Alaska DOT – Northern Region and a public seaplane base. Barge service is available during the summer season, and once the waterways freeze, snow machines and all-terrain vehicles replace boats on the river.

The City draws surface water from the Kuskokwim River and owns and operates the water treatment plant that serves McGrath's residents. Most homes and facilities are completely plumbed and sewage is piped to a stabilization pond. A diesel generator provides electric service, which is provided by MTNT Ltd. There is a landfill site located south of the community.



City Water Treatment Plant and source for surface water from the Kuskokwim River across from the plant.

4 Risk Assessment

44 CFR § 201.6(c)(2) requires local jurisdictions to provide sufficient hazard and risk information from which to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Risk assessment is the process of identifying the potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process is accomplished using four steps:

Step 1: Identify Hazards

Step 2: Profile Hazard Events

Step 3: Inventory Assets and Vulnerabilities

Step 4: Estimate Losses

The following sections address the unique hazards faced by McGrath and describe the community's risk based on the probability of disaster, vulnerability, and exposure.

In accordance with 44 CFR §201.6, the Risk Assessment (Section 4) is the basis for the mitigation strategy (Section 6). Information in this chapter is used by the Planning Committee to identify and prioritize mitigation actions.

Table 4-1 Federal Requirements for Risk Assessment

44 CFR §201.6 Local Mitigation Plans (c) Plan Content (2) Risk Assessment The risk assessment shall include:
(i) *A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events* ***(ii)*** *A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of:* ***(A)*** *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;* ***(B)*** *An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;* ***(C)****Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.* ***(iii)*** *For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*
44 CFR §78.5 Flood Mitigation Plan development
(b) *Description of the existing flood hazard and identification of the flood risk, including estimates of the number and type of structures at risk, repetitive loss properties, and the extent of flood depth and damage potential.*

4.1 Hazard Analysis

Hazard analysis involves identifying and profiling the hazards that could affect the community. A hazard analysis includes the identification, screening, and profiling of each hazard.

Hazard identification is the process of recognizing the natural events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. Human, Technological, and Terrorism related hazards are beyond the scope of this plan. Even though a

particular hazard may not have occurred in recent history in the study area, all natural hazards that may potentially affect the study area are considered; the hazards that are unlikely to occur or for which the risk of damage is accepted as being very low, are eliminated from consideration – *hazard screening*.

Hazard profiling is accomplished by describing hazards in terms of their nature, history, magnitude, frequency, location, extent, and probability. Hazards are identified through historical and anecdotal information, existing plans, studies, and hazard maps collection and review for the study area. Hazard maps are used to determine the geographic extent of the hazards and define the approximate boundaries of the areas at risk.

For this 2018 MJHMP Update the hazard analysis begins with a review of the previous MJHMP and progress made through implementation of mitigation actions and the mitigation strategy. For flood and erosion abatement, the construction of the rock amourment along the riverbank, has decreased the vulnerability from impacts. Firebreaks were cut around the perimeter of the community, which has decreased the vulnerability from wildfire impacts by reducing the risk of fire spreading to the community.

4.2 Hazard Identification and Screening

The Planning Committee reviewed the possible hazards profiled in the Draft 2015 MJHMP Update, then evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or perception of the relative risk presented by each hazard, ability to mitigate the hazard, and the known or expected availability of information regarding the hazard.

The Planning Committee determined that six hazards pose the greatest threat to the community: flood, erosion, wildfire, severe weather, permafrost degradation (subsidence), and earthquake. The remaining hazards were excluded through the screening process as they are considered to pose a lower threat to life and property in the community due to the low likelihood of occurrence or the low probability that life and property would be significantly affected.

Table 4-2 Identification of Hazards

Hazard Screening	Hazard Profiled (yes/no)	Profile Justification
Flood	Yes	McGrath experiences ice jams, snowmelt run-off and rainfall flooding during spring thaw and the fall rainy season. The last two major disasters were attributed to flooding. See erosion profile Section 4.3.1.
Erosion	Yes	McGrath experiences riverine erosion along the Kuskokwim river embankment from high water flow, riverine ice flows, wind, surface runoff, and boat traffic wakes. See erosion profile Section 4.3.2.
Fire – Structural Fire & Community Conflagration	Yes	Wildland fires have been documented within the boundaries of McGrath; however, many wildland fires have occurred in the vicinity. See fire hazard profile Section 4.3.3.

Hazard Screening	Hazard Profiled (yes/no)	Profile Justification
Severe Weather	Yes	Annual weather patterns, severe cold, heavy rain, thunder and lightning strikes, freezing rain, snow accumulations, and wind, are the predominate threats. Severe weather systems bring severe cold, wind, freezing rain, and floods. See sever weather profile Section 4.3.4.
Ground Failure	Yes	McGrath is located in an area of discontinuous permafrost, and experiences thawing and sinkholes. See profile Section 4.3.5.
Earthquake	Yes	Periodic, unpredictable occurrences. The 2003 Denali fault earthquake was referred to in public meeting but no severe losses have been reported. See earthquake profile Section 4.3.6.
Climate Change	No	The community is experiencing an increase in severity and frequency of severe weather, wildfires, floods, and subsidence. The community realizes the amplifying effects of climate change on existing hazards but asked that this not be profiled as a hazard in and of itself. See climate change discussion Section 4.3.7.
Volcano	No	Not profiled. Wind-blown volcanic ash may pose some problems for the community but is not a significant hazard.
Snow Avalanche	No	Not profiled. Community is at low risk for avalanche. The predominately flat terrain is not conducive to avalanche.
Tsunami and Seiche	No	Not profiled. Community is separated from Cook Inlet by the Alaska Range, is nearly 300 miles from Bristol Bay, and over 175 miles from Norton Sound. There are no large lakes in the area to generate a seiche.

4.3 Hazard Profile

The specific hazards selected by the Planning Committee for profiling are discussed with regard to the following factors:

- Nature of the hazard;
- Locations that will be affected by the hazard;
- Potential magnitude and severity of the hazard event;
- History of the hazard occurrence in the community;
- Probability of future events
- Potential magnitude and severity

Each hazard is assigned a rating based on the following criteria for probability (Table 4-3) and magnitude/severity (Table 4-4).

NFIP insured Repetitive Loss Structures (RLS) are addressed in Section 4.6.

Table 4-3 Hazard Probability Criteria

Probability	Criteria
4 - Highly Likely	Event is probable within the calendar year. Event has up to one in one year chance of occurring (1/1=100%). History of events is greater than 33% likely per year. Event is "Highly Likely" to occur.
3 - Likely	Event is probable within the next three years. Event has up to one in three years chance of occurring (1/3=33%). History of events is greater than 20% but less than or equal to 33% likely per year. Event is "Likely" to occur.
2 - Possible	Event is probable within the next five years. Event has up to one in five years chance of occurring (1/5=20%). History of events is greater than 10% but less than or equal to 20% likely per year. Event could "Possibly" occur.
1 - Unlikely	Event is possible within the next 10 years. Event has up to one in ten years chance of occurring (1/10=10%). History of events is less than or equal to 10% likely per year. Event is "Unlikely" but is possible of occurring.

Table 4-4 Hazard Magnitude/Severity Criteria

Magnitude / Severity	Criteria
4 - Catastrophic	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
3 - Critical	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25% of property is severely damaged.
2 - Limited	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10% of property is severely damaged.
1 - Negligible	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

The hazards profiled for the City of McGrath and the Native Village of McGrath are presented in the following subsections. The order of presentation of the hazards profiled does not signify the level of importance or risk, which may fluctuate over time and with other changes that take place in the community.

4.3.1 Flood

McGrath has a history of significant flooding and has implemented mitigation measures. Flooding is McGrath's highest priority hazard for mitigation planning.

May 2009 flood impacts the riverbank in McGrath along Takotna Avenue.

Nature

McGrath is located on the inside of an oxbow on the Kuskokwim River. It is situated on flat land slightly above riverbank elevation. The community is frequently subjected to ice jams and stream overflow flooding from the Kuskokwim River. The U.S. Army Corps of Engineers reported a high frequency of flooding and found McGrath to be in a high flood hazard area.

Several types of flooding are described in this profile of flood hazard, but three primary types of flooding threaten the McGrath area: rainfall-runoff, snowmelt, and ice jam floods.

Rainfall-Runoff Flooding

Rainfall-runoff flooding occurs in late summer and early fall. The rainfall intensity, duration, distribution, and geomorphic characteristics of the watershed all play a role in determining the magnitude of the flood. Rainfall runoff flooding is the most common type of flood.

Snowmelt Floods

Snowmelt floods typically occur from April through June. Snowpack depths, spring weather patterns, and geomorphic characteristics of the watershed determine the magnitude of flooding.

Ice jam floods

Ice jam floods occur after an ice jam develops on a river or stream and blocks the path of flowing water. This type of flood may occur any time when ice is present. Ice jams form during the following three situations:

- Fall freeze up
- Midwinter when stream channels freeze forming anchor ice.
- Spring breakup, when the existing ice cover breaks apart, flows downstream, and jams together at narrow sections of the stream channel.

Ice jams commonly develop in areas where the channel slope decreases, becomes shallow, or at constricted areas such as at bridges, bends in the river, headwaters, and reservoirs. Ice jams frequently impede water along rivers during spring break-up.

The water level rises upstream behind the ice jam and floods low lying areas. As the ice jam is breached, there is usually rapid draining of the excess flood water. The water level downstream will rise quickly and behave much like a flash flood, carrying large chunks of ice, trees, bank vegetation, and other debris in it's current. Notable large floods in recent years on the Kenai, Susitna, Kuskokwim, and Yukon rivers were all caused by ice jams in conjunction with water from melting snow.

Ice Overflow (Aufeis) Flood

Aufeis is glaciation or icing of streams and rivers, affecting road surfaces and infrastructure. Aufeis forms during the winter when emerging ground water freezes. Stream glacial flooding occurs when ice forms from the bottom up not from the top down, forcing water out of the stream channel. If aufeis occurs on a roadway, it makes travel difficult.

Timing of events

Many floods are predictable based on rainfall patterns. Most of the annual precipitation is received from July through October with August being the wettest. This rainfall occasionally leads to lake overflow flooding in early/late summer and/or fall. Spring snowmelt increases runoff, which can cause flooding from the same lake source.

Location

The entire McGrath townsite is located in an oxbow of a migrating riverbed. The whole area is a designated floodplain. Previously, Takotna Avenue had served as both a main transportation route and the primary levee. Since 2002, portions of it have washed out, leaving the community vulnerable to the next flood event.

In 2015, NRCS assisted McGrath with reconstruction of a protective levee along Takotna Avenue to prevent flooding and erosion.

Table 4-5 provides an inventory of structures within 100 feet of the river and between 100 feet and 500 feet.

Table 4-5 Inventory of Structures in Flood Plain

Structures 100' or less from the riverbank:	Structures 100' to 500' from the riverbank
Residences: 21	**Residences: 52**
Warehouses, Sheds & Workshops: 17	**Warehouses, Sheds & Workshops: 28**
Commercial:	**Commercial:**
1. Large shop – equipment storage (Ben Magnuson) 80'	1. Don Harris Shop (large log building) - 143'
2. Old Trading Post (unoccupied – Eep Anderson) 50'	2. The Shoppe – general store (Shelborne) - 180'
3. Joe's Bar (Alli and Joe Dale) 50'	3. GCI Earth Station & satellite dish - 300'
4. Alaska Commercial Co. (store & warehouse) 100'	4. Pole Barn – equipment storage (Ben Magnuson)

Structures 100' or less from the riverbank:	Structures 100' to 500' from the riverbank
5. Magnuson Air 100'	5. Innoko Building (Joaquin Investments) - 400'
6. Joaquin Investments (hangar & office) 100'	6. Innoko Wildlife Refuge Offices
7. Ephrem's Logs and Firewood 100'	7. M.T.N.T. Limited Offices
8. Magnuson Sawmill 100'	8. Borealis Broadband Internet Service - 300'
9. General Services Store (Ann Egrass) – 100'	9. McGrath Native Village Council Offices -300'
Public:	10. McGrath Light and Power Co.
9. Cap'n Snow Center (washeteria, offices, City fuel storage) 96'9"	a. Tank Farm - 250'
10. Water Treatment Plant and office 100'	b. Power Generator - 275'
11. State Troopers office in Cap'n Snow Center	c. Warehouse - 300'
12. City Administrative offices in Cap'n Snow Center	d. Workshop - 175'
13. Southcentral Foundation administrative offices	11. AK Fish and Game
14. Community Health and Behavioral Health Center (regional clinic)	12. Crowley Tank Farm and Pumps - 375'
15. Volunteer Fire Department and Kuskokwim Valley Rescue Squad	13. Hotel McGrath B&B - 200'
16. Buried water main 57'	14. PenAir Station and ticket counter - 200' (inside Hotel McGrath
17. Water storage tanks 100'	15. AK Trooper and Fish &Wildlife bulk fuel tanks – 200'
18. Airport & runway	**Public:**
19. Community park and ball park	1. US Post Office – 250'
20. City owned commercial lease lots – industrial park	2. City bulk fuel tank farm – 140'
21. Coyle's Logs and Lumber	3. Chinana Ave. (main road) – 500'
22. Equipment staging and storing	4. City garage & shop – 200'
23. Limestone rock stockpile and equipment storage	
24. Log haul out ramp	
25. Community Garden, with water tank, storage shed and equipment	
26. Takotna Ave., Tonzona Ave., Industrial Park Dr. – entire lengths	

History

Flooding is a regular occurrence in McGrath. There were significant floods in 1921, 1924, 1927, 1933, 1937, 1957, 1972, 1974, 1976, 1981, 1982, 1987, 1990, 1991 (DR-0909-AK), 1994, 1996, 2002 (DR-1423), 2005 (AK-05-213), and 2009 (DR-1843), the most extensive of which was the ice jam flood of 1991. This flood inundated 65 structures in McGrath and prompted a State Disaster Declaration with Preliminary Damage Assessments of more than $2 million for Individual Assistance and $7.4 million in total Public Assistance for damage to buildings and equipment.

Probability of Future Events

Recorded historical flooding information indicates McGrath experiences flooding every two to five years, and that trend is expected to continue. Therefore, according to Table 4-3 criteria, the probability of continued flooding is "Highly Likely" rating of 4.

Potential magnitude and severity

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence.

Based on Table 4-4 criteria, impacts to the community are "Critical" rating of 3, with injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for at least 2 weeks, and more than 25 percent of property severely damaged.

4.3.2 Erosion

Nature

Erosion rarely causes death or injury. However, erosion causes the destruction of property and infrastructure, and reduces the available extent of land available for development. Erosion is a natural process, but its effects can be exacerbated by human activity.

Erosion is the wearing away, transportation, and movement of land. It's usually gradual but can occur rapidly as the result of floods, storms or other events, or slowly as the result of long-term environmental conditions.

There are numerous types of erosion with various causes. McGrath is vulnerable to riverine erosion reported to be accelerated in recent years.

Riverine Erosion

Riverine erosion results from the force of flowing water and ice formations in and adjacent to river channels. This erosion affects the bed and banks of the channel and can alter any channel or riverbank. In less stable braided channel reaches, erosion, and deposition of material are a constant issue. In more stable meandering channels, episodes of erosion may only occur occasionally.

Most of the geomorphic change that occurs in a river system is in response to a peak flow event. It is a natural process, but its effects can be exacerbated by human activity. Removing vegetation or disturbing soils at the river bank, wave action due to boat wash, and in-channel construction that alters flow are some examples of human activity that can exacerbate riverine erosion.

Riverine erosion in areas of permafrost removes insulating soil and contributes to permafrost melting, thus decreasing the shear strength of the river bank soils making them more susceptible to erosion. Ice rich permafrost melting also causes saturation of the riverbank which increases erosion potential. The degradation of permafrost has an accelerating and compounding effect on erosion process.

Figure 4-1 Phase 1 NCRS Riverbank Stabilization Project

Location

Refer to the 2015 FEMA Flood Insurance Rate Map (FIRM) to see flooding elevations and locations in McGrath.

The Kuskokwim River has removed most of the bank protecting Takotna Avenue and is continuing towards town. Presently, there are 21 residences; 17 various structures, such as sheds and workshops; 10 commercial buildings; and over 21 public structures and infrastructure within 100 feet of the river. The factors influencing erosion rates in this area are floods, ice scour, and thawing permafrost.

Erosion is occurring all along the Kuskokwim riverbank. During break-up, the thawed riverbank is water saturated and unstable allowing the swollen river to wash it away. The community is concerned with a stretch of river along Takotna Avenue, which is migrating inland.

Figure 4-1 is a project photograph provided by NRCS from their 2010 Phase One riverbank stabilization project, armoring approximately 1,100 feet. Completed in 2014, Phase Two extended this project another 1,900 feet along Takotna Avenue.

Photos taken in August 2016 along Takotna Avenue show undercutting from the Kuskokwim River causing streambank erosion.

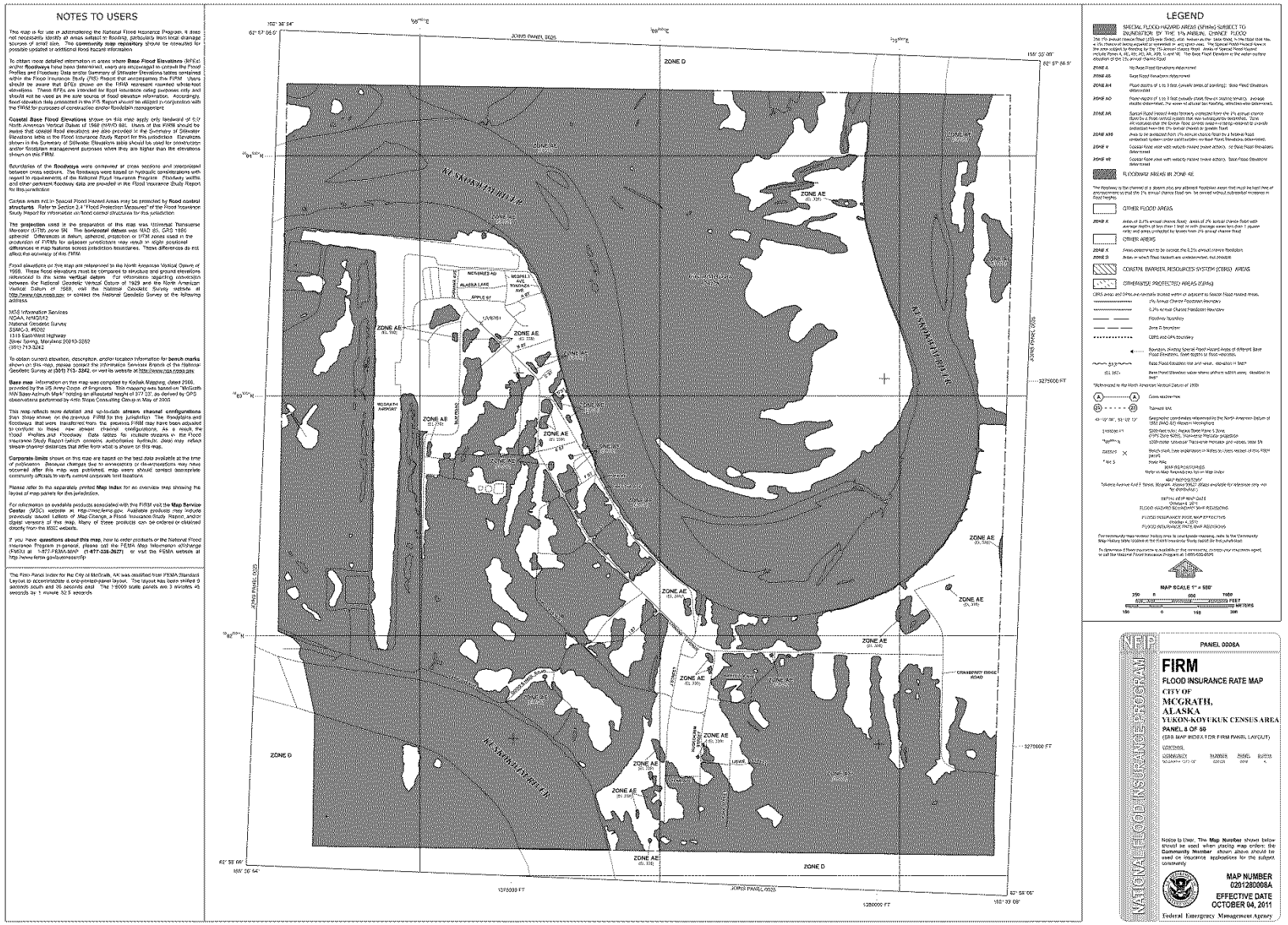


Figure 4-2 Firm Map - McGrath, AK

History of Events
According to the 2009 USACE Alaska Baseline Erosion Assessment Study:

> *A significant hydraulic event occurred just after breakup in 2001; the Kuskokwim River created a cut-off channel across an oxbow approximately 1 mile downstream of McGrath. The presence of this new channel resulted in a significant acceleration in the erosion rates through McGrath, and along the "McGrath oxbow" where the city is located. Prior to the cut-through channel breaking through, historical erosion rates in McGrath had typically been estimated at between 5 to 10 feet per year. In a 1999 Corps trip report, the erosion rate was reported to be as high as 10 to 20 feet near the log haul-out ramp at the upstream end of the city. The most critical erosion areas where rates seem to be highest include (1) a point from the log haul out, downstream past the area across from the Cap'n (Captain) Snow Center Community Building at the city water intake point; to the Russell Ivey property, (2) downstream end of town from the end of the runway, industrial park, past the community ballpark to the unimproved barge landing, and (3) Tonzona Avenue downstream from "B" Street to the Alaska Commercial (AC) Company corner. In the May 2005 flood event, it flooded and washed out a road connecting Cranberry Ridge and the populated area of McGrath, it did not flood at the point, McGrath had excessive erosion beginning with an immediate 5 feet which continued on, eating into a levee that protects the adjacent 1,100 feet of property and homes that is being addressed by the Natural Resources Conservation Service (NRCS) Emergency project. The event occurred when wind caused the added problem of wave chop. The erosion rates vary. Sink holes form in a line in some areas to give warning where the next sections will develop fissures that will cause long and wide chucks to fall into the river. Gradual erosion is estimated by the city to be at least 6 feet minimum per year in many areas. (USACE, 2009)*

In McGrath one structure has been moved incrementally and has become an issue because it is now on City property.

Probability of Future Events
Erosion occurs annually, although the severity varies. The most significant erosion events happen during spring break-up and can be expected to continue repeatedly due to the ongoing nature of riverine erosion.

Based on McGrath's history and the criteria identified in Table 4-3 it is "Likely" erosion will occur in the next three years as the probability is greater than 20 percent but less than or equal to 33 percent likely per year for a rating of 3.

Potential magnitude and severity
The primary impact from erosion is the loss of land and anything on it. Erosion may increase sedimentation of river deltas and hinder channel navigation. Other impacts include reduction in water quality due to high sediment loads, loss of native aquatic habitats, damage to public utilities such as fuel headers and electric and water/wastewater utilities, and economic impacts attributed to preventing or controlling erosion sites.

Referring to past events, the 2009 USACE Alaska Erosion Assessment, and the criteria identified in Table 4-4, the impact upon the City of McGrath is "Limited" for a rating of 2, with injuries treatable by basic first aid, critical facilities shutdown more than 24 hours, and more than 10 percent severely damaged property and critical infrastructure.

4.3.3 Fire
McGrath has identified both wildfire and conflagration (fire that engulfs and spreads to adjacent structures in a community) as potential hazards in their community.

Nature

Wildland fire

A wildland fire is a type of uncontrolled fire that spreads via consumption of vegetation. Fire is a natural wildland management force in the Alaskan Interior. It is a key environmental factor in cold-dominated ecosystems. Without fire, organic matter accumulates, the permafrost table rises, and ecosystem productivity declines. Fire rejuvenates an ecosystem by removing decaying matter and returning their nutrients to the soil, preserving vegetative diversity and wildlife habitat unique to Alaska. In the absence of wildland fires, many plant and animal species would no longer thrive.

While fire is critical for maintaining the viability of Alaska's ecosystems, it must be tempered with the need to protect human life and property. This is particularly true of fires burning in wildland urban interface (WUI) areas, where structures and other human development meet or intermingle with undeveloped wildland. WUI has gained importance throughout Alaska with increased development adjacent to wild lands.

Firefighter and public safety is the primary concern of the land and wildland management agencies. McGrath resides in the Full Management Option area. In the outlying area, the fire management option ranges from Limited to Modified. In Alaska, thousands of acres burn every year in 600 to 800 fires primarily between the months of March and October.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance river and stream siltation, thereby enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards.

Conflagration

For the purposes of this hazard characterization, community fire conflagration is defined as a community fire that involves one or more critical facilities in the community. The number of structures required to meet this general definition of "conflagration" varies with the size of the community. Commonly conflagration is characterized as fire that involves a significant portion of the community's built environment; however, in a village community the destruction of a single critical facility due to fire may justify a community disaster declaration. Conflagrations, so defined, are a disaster level hazard because they can substantially impair the community's ability to function. In contrast to wildland fire, conflagrations involve constructed materials and developed areas of the community as their primary fuel source.

Conflagrations may start from a variety of common fire ignition sources and causes but typically originate in one structure and spread to others through radiant heat, embers, convection, or direct flame impingement. They are a serious concern following earthquakes and can result from accidents or arson. Contributing factors to conflagrations include wind, temperature, slope, the density and proximity of structures, community firefighting capability, and building construction standards and materials. Factors complicating conflagrations are hazardous substance releases, structural collapse, interruption of services and commerce, loss of historical and cultural values, requirements for evacuation, and sheltering. While conflagrations can occur in different facilities within a community, a primary concern in many Alaska villages is the "old town" area where construction is denser and older and there are public utilities as well as significant historical and commercial property.

Older abandoned buildings should be considered a potential source of fire in the community as these wooden structures present an attractive nuisance site where children could allow a heat source or smoking material to get out of control. Older buildings can be expected to have an increased likely hood of collapse during fire which increases their hazard magnitude.

History and Location

Figure 4-3 History of Fires and Wildfires - Upper Kuskokwim shows the location of reported fires and the perimeter of wildfires from 1990 to 2017.

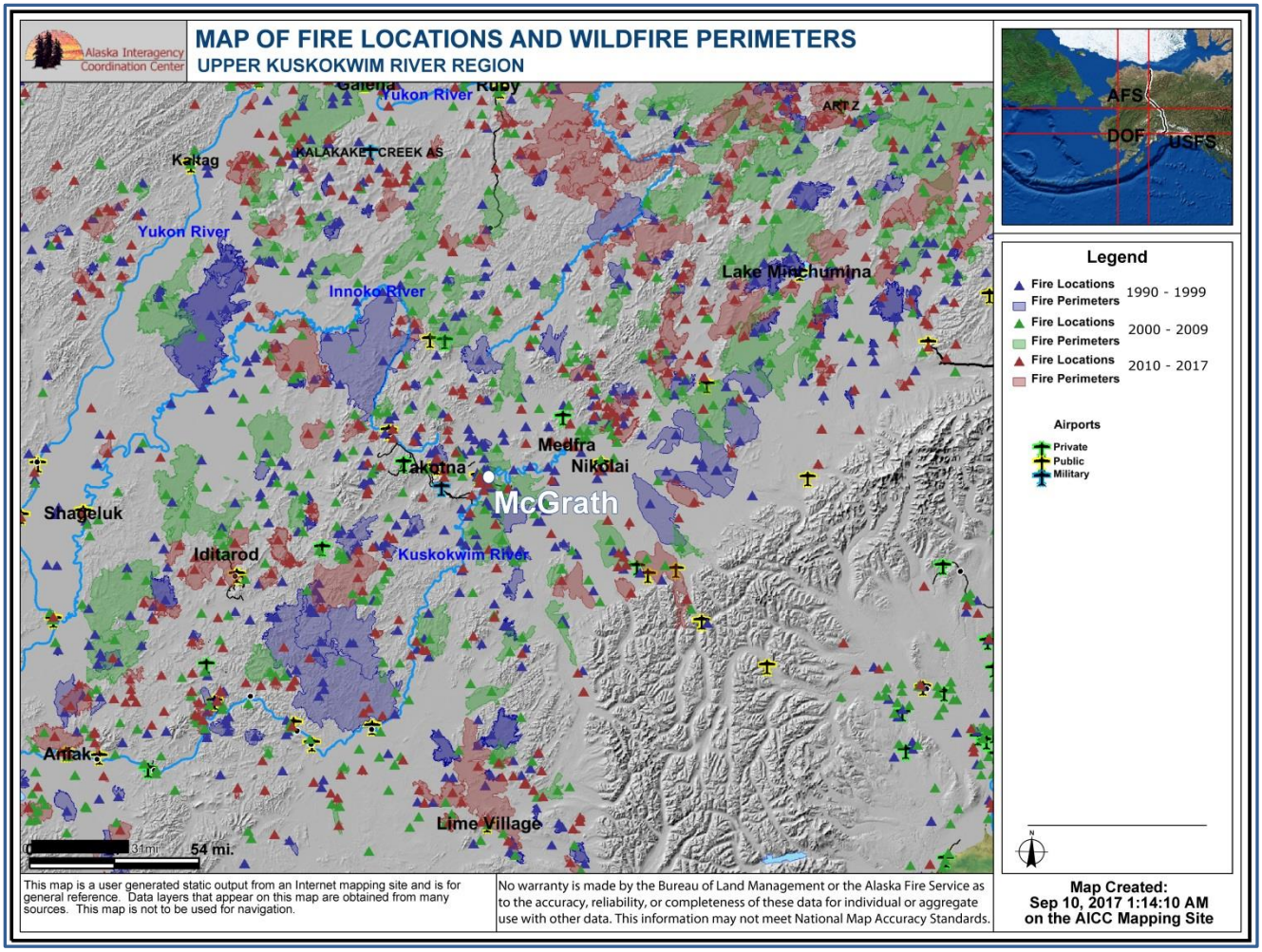


Figure 4-3 History of Fires and Wildfires - Upper Kuskokwim

The Bureau of Land Management (BLM) and the Alaska Fire Service (AFS) maintain a database of historic fire reporting. This data set reports 514 fires within a 100 mile radius of McGrath between 1990 and 2017.

Recent reporting includes threatened and burned structures, and costs associated with the event. The data set does not include injuries or deaths.

Table 4-6 Recent Fires Within 50 Miles of McGrath That Have Threatened Structures

Fire Name	Fire Year	Estimated Acres	Total Cost	Structures Threatened	Structures Burned
Cranberry Ridge 2	2013	0.1	$2,644	2	0
Amos Avenue	2017	0.5	$10,412	1	1
Cranberry Ridge	2013	16.4	$38,410	7	0
Dome Creek	2013	26.4	$13,085	2	0
Gold Mine	2013	247.5	$390,669	2	0
Ball Creek	2017	13924	$204,700	31	0
Pitka Fork	2017	16823.9	$315,729	30	0
Iditarod River	2015	75135	$282,645	50	3
Moore Creek	2013	157747.3	$371,499	24	2

Source: AICC, Fire History Locations – McGrath 2017

Probability of Future Events

During the summer, the entire community is vulnerable to wildland fire as most of the structures are constructed of wood and other flammable materials. Standing timber and other natural fuels interface with the community.

The U.S. Environmental Protection Agency (EPA), reporting on the impacts of climate change in Alaska:

> *Higher temperatures and drier conditions increase the risks of drought, wildfire, and insect infestation. Large wildfires have consumed more boreal forest in Alaska in the last ten years than in any other decade recorded, and the area burned annually is projected to double by 2050. Warmer temperatures are also expected to worsen insect damage to forests across much of the state, which may increase the area of standing dead, highly flammable trees that are especially vulnerable to wildfire (Chapin, et al., 2014).*

Between 2009 and 2017 there have been 160 fires reported within a 50-mile radius of McGrath, of these 106 have burned at least 5 acres. During that period there have been 2 fires within a 5 mile radius that have burned 2 acres or more. (AICC, Fire History Locations - McGrath, 2017). Based on 2009 to 2017 data a fire burning 2 or more acres within 5 miles of McGrath has a recurrence rate of 1 in 4 years, or a probability of 25%. Despite a lack of reported fires within the community, the probability of a wildfire event impacting McGrath should be considered "Likely," with a rating of 3 based on Table 4-3, that is between 20% and 33% likely in a given year.

Potential Magnitude and Severity

Based on past wildland fire events and the criteria identified in Table 4-4 Hazard Magnitude/ Severity Criteria the impacts could be "Critical" for a rating of 3, with injuries, critical facilities shut down for more than two weeks, and more than 25 percent severely damaged property and infrastructure. Additionally, airborne smoke and ash have driven those with sensitive respiratory systems to temporarily relocate during past wildfires.

Without mitigation or preparation efforts, the impacts of a wildland interface fire in McGrath could grow into an emergency or disaster. In addition to affecting people, wildland fires may severely affect subsistence resources, including game and berries. Such situations may require emergency life support, evacuation, and alternative shelter.

Indirect impacts of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thus increasing flood potential, harming aquatic life, and degrading water quality.

4.3.4 Severe Weather

Impacts associated with severe weather events includes roof collapse, trees and power lines falling, damage to light aircraft and sinking small boats, injury and death resulting from snow machine or vehicle accidents, overexertion while shoveling all due to heavy snow. A quick thaw after a heavy snow can also cause substantial flooding. Impacts from extreme cold include hypothermia, halting transportation from fog and ice, congealed fuel, frozen pipes, disruption in utilities, frozen pipes, and carbon monoxide poisoning. Buildings that are older and/or not constructed with materials designed to withstand heavy snow and wind (e.g., hurricane ties on crossbeams) are more vulnerable to the impacts of severe weather.

Nature

Winter weather includes heavy snows, ice storms, extreme cold, and high winds. This weather can affect aviation transportation, which is the major mode of transporting food, equipment, mail, and supplies into McGrath.

Heavy Snow generally means:

- Snowfall accumulating to 4 inches or more in depth in 12 hours or less.
- Snowfall accumulating to 6 inches or more in depth in 24 hours or less.

Drifting Snow is an uneven distribution of snowfall and snow depth caused by strong surface winds. Drifting snow may occur during or after a snowfall.

A **Blizzard** means that the following conditions are expected to prevail for a period of 3 hours or longer:

- Sustained wind or frequent gusts to 35 miles per hour or greater.
- Considerable falling and / or blowing snow reducing visibility to less than 1/4 mile.

Extreme Cold varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered extremely cold. In Alaska, extreme cold usually involves temperatures less than -40ºF. Extreme cold may accompany winter storms or high barometric pressure and clear skies.

Ice Storms are excessive accumulations of ice during a freezing rain or sleet event. Freezing rain and sleet commonly occur within a narrow band of a storm which may deposit heavy amounts of snow in other locations.

High Winds often accompany winter low-pressure systems from the North Pacific Ocean and the Gulf of Alaska. Alaska's high wind can equal typhoon force but fall under a different classification because they are neither cyclonic nor exhibit other characteristics of typhoons. In Alaska, winds in

excess of 60 miles per hour (mph) occur rather frequently over the interior due to strong pressure differences, especially where influenced by mountainous terrain. McGrath's highest measured wind speed reached 64 mph.

Location

The entire McGrath area is vulnerable to the effects of severe weather. Winter snows average eight inches per storm; wind speed varies based on weather patterns but reach as high as 60 mph, while record low temperatures have reached -75ºF.

McGrath is in the National Weather Service (NWS) Weather Zone 227 encompassing the Upper Kuskokwim Valley of Alaska. The National Weather Service has continued to modify their system for assigning weather zones to facilitate and more accurately confine weather patterns to relevant geographic areas.

History of Events

Table 4-7 lists the National Weather Service's major storm events for McGrath's area.

Table 4-7 Severe Weather Events

Ident	Location	Date	Event	Description
PAMC	McGrath	26-29 Jan 89	Extreme Cold	Coldest recorded air mass in McGrath, minus 75 Fahrenheit.
PAMC	McGrath	17 Mar 82	Heavy Snow	Third most snow recorded in a single day, 12".
PAMC	McGrath	3 Mar 85	Heavy Snow	McGrath receives 10.1 inches in a single day.
PAMC	McGrath	27 Feb 96	Heavy Snow	McGrath receives 10.9" in a single day.
PAMC	McGrath	2 Feb 00	Heavy Snow	Second most snow recorded in a single day, 12.4".
PAMC	McGrath	1 Jan 05	Heavy Snow	Most snow recorded in a single day, 16.2".
PAMC	McGrath	17 Jan 09	High Winds	Highest wind speed recorded in McGrath, 61 mph.

Source: National Weather Service, 2015

Probability of Future Events

Based on previous occurrences and the criteria identified in Table 4-3, it is "Highly Likely" with a rating of 4, a severe storm event will occur in the next three years (event has up to 1 in 3 years chance of occurring) as the history of events is greater than 20 percent but less than or equal to 33 percent likely per year.

Potential Magnitude and Severity

McGrath experiences the following severe weather events:

- Heavy Rain
- Heavy Snow
- Drifting Snow
- Freezing Rain and Ice Storms
- Extreme Cold
- Winter Storms

The McGrath area is most vulnerable to high winds during the winter season. Winds may sweep up loose snow and produce blinding blizzards and dangerous wind chills. Additionally, high winds may damage community facilities and infrastructure.

Extreme cold may hinder transportation. Aircraft are often grounded during extreme cold and ice fog conditions, disrupting access as well as the flow of supplies to remote communities. Extreme cold may also interfere with a community's infrastructure. Occasionally old, overtasked, or ill maintained power generators will fail during extremely cold weather. If prolonged extreme cold conditions are combined with low or no snow cover, buried pipes may freeze or heave. However, the greatest danger from extreme cold is exposure. Frostbite and hypothermia are life-threatening medical conditions associated with prolonged exposure. To alleviate symptoms of exposure, people often use supplemental heating devices not approved for indoor use, thus increasing their risk to carbon monoxide or carbon dioxide poisoning.

Based on Table 4-4 criteria, the impact of a severe winter storm is "Negligible" for a rating of 1. Structures and infrastructure have been constructed to withstand annual occurrences of severe winter storms. Thus, there is a small potential for injuries, less than 10 percent of property would be damaged, quality of life would be degraded to a minor degree, and the shutdown of critical facilities and services would occur for less than 24 hours.

4.3.5 Ground Failure (Land Subsidence)

Nature
Land subsidence is characterized as any sinking or settling of the earth's surface. Underground mining, ground water, petroleum extraction, and drainage of organic materials are typical causes of subsidence. However, these causes for land subsidence are rare in Alaska. More common land subsidence causes in Alaska are sediment compaction, tectonic subsidence during earthquakes, and ice-rich permafrost thawing.

In McGrath, land subsidence can be contributed to seasonally frozen ground and permafrost thawing. The subsidence is also linked to riverbank erosion: the sandy soil allows for water to readily drain into the ground until it reaches the permafrost table. Water may then travel horizontally across the table and drain through the unfrozen, exposed riverbank. As the riverbank erodes, the permafrost table retreats from the exposed bank as the insulating soils are washed away. In addition to affecting the land stability directly above the melting permafrost table, this can increase the rate of water drainage vertically as it is unimpeded by the permafrost, allowing for a more rapid flow and collapse of surface ground layers.

Indications of subsidence, i.e. sinkholes, have been reported as a precursor of erosion events at the banks of the Kuskokwim River in McGrath (USACE, 2009)

Location
Permafrost mapping published in 2013 indicates that the Upper Kuskokwim Valley is characterized by discontinuous and sporadic permafrost with isolated permafrost along the river corridors. McGrath is in an area of isolated permafrost, 0-10%, (see **Figure 4-4 Permafrost Map of Alaska**). Permafrost degradation in McGrath is reported as a hazard due to subsidence impacts on roadways, which could be a result of freeze thaw cycles within the constructed roadway prism.

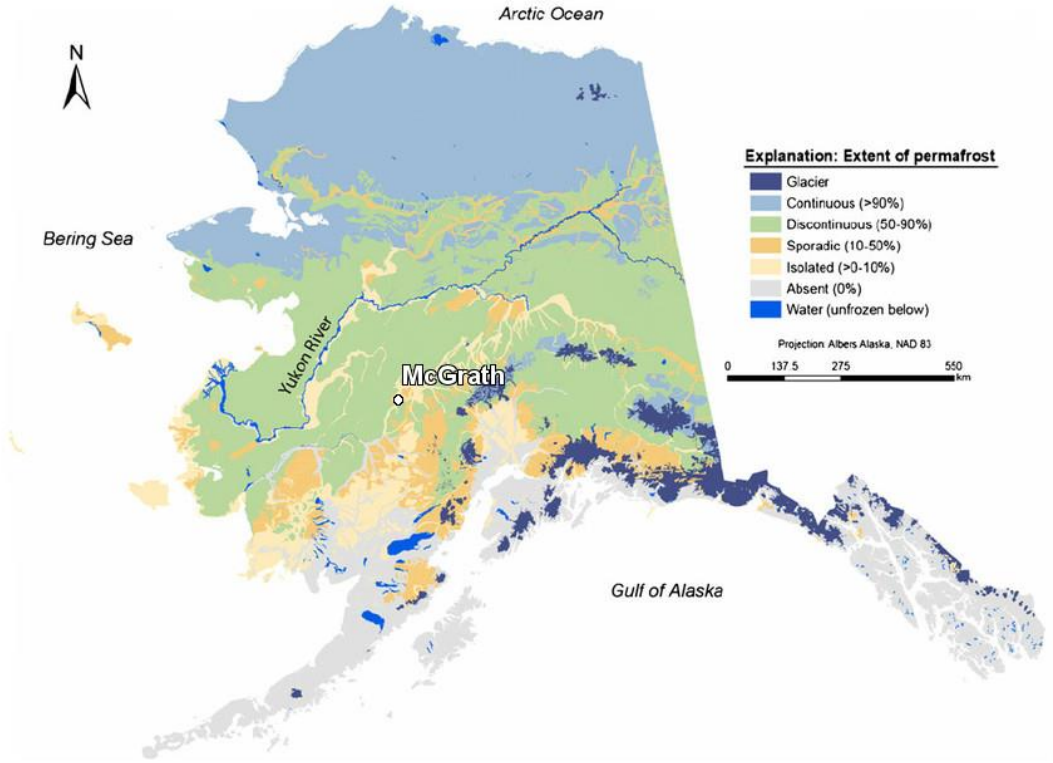


Figure 4-4 Permafrost Map of Alaska (Callegary, 2013)

History of Events

There is no written record defining permafrost impacts in McGrath. However, the Planning Committee has described roadways collapsing as potentially a result of permafrost degradation and ground failure.

Probability of Future Events

Historical permafrost damage data does not exist for McGrath. However, the planning team noted that annually frost heaves occur, affecting structures and roads adjacent to the Kuskokwim River, and the airport runway. The planning team reasoned future damage from permafrost degradation is "Possible," with a rating of 2, based on Table 4-3. In the next five years as the probability is greater than 10 percent, but less than or equal to 20 percent likely per year.

Potential Magnitude and Severity

Based on past permafrost degradation events and the criteria identified in Table 4-4 Hazard Magnitude/Severity Criteria, the extent of permafrost degradation impacts in McGrath are considered "Negligible," with a rating of 1, where injuries are treatable with first aid, minor quality of life is lost, less than 24 hours loss of critical facilities and services, and less than 10 percent of severely damaged property.

4.3.6 Earthquake

Alaska is known for its big earthquakes, and the frequency of earthquakes. McGrath has had a total of 18 earthquakes since 1931. The USGS database shows a 23.03 percent change of a major earthquake within 50 kilometers of McGrath within the next 50 years. The largest earthquake within

30 miles of McGrath was a 3.6 M in 1990. Nonetheless, a brief profile of earthquake hazard is provided here for McGrath.[6]

There are reports of large central-Alaska earthquakes being felt in McGrath.

The USGS provides a map of frequency of damaging earthquake shaking in Alaska Figure 4-5. While the Southcentral and Aleutian regions have a high frequency of occurrence, the west central region that includes McGrath should not expect more than 20-50 occurrences of damaging earthquake shaking in 10,000 years. That is, the probability of occurrence is less than once in 200 years or 0.5% in a given year.

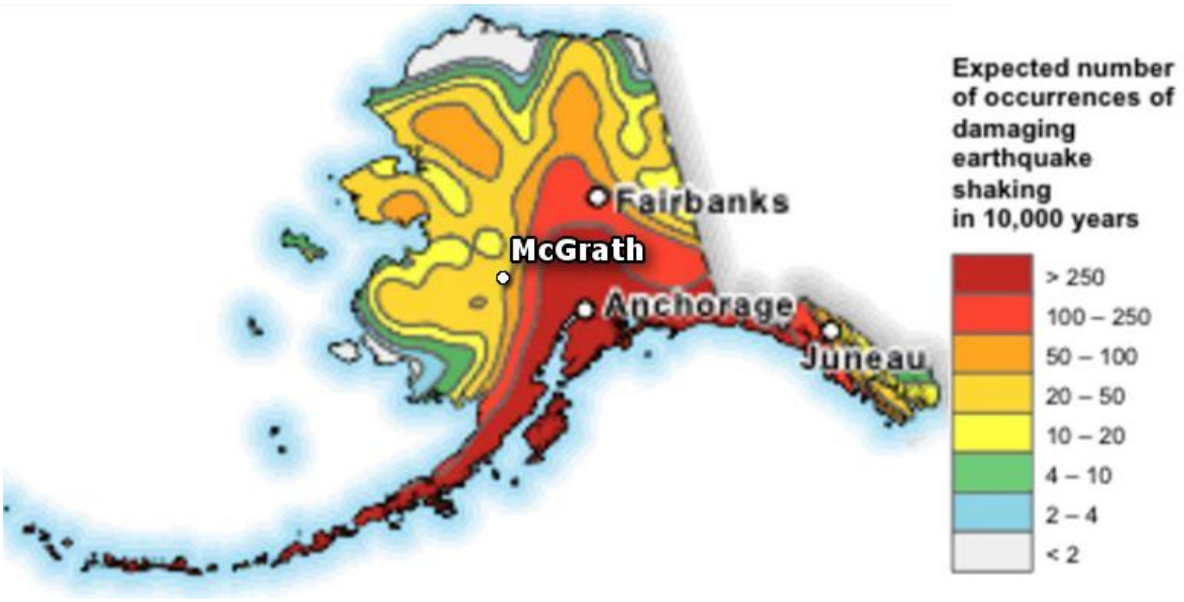


Figure 4-5 Expected Earthquake Damage Occurrence (USGS, Introduction to the National Seismic Hazard Maps, 2014)

4.3.7 Climate Change

Climate change is difficult to profile in the same way that we profile the other natural hazards. We describe here the nature of climate change and its potential impacts on specific hazards. For example, melting permafrost is caused by warming temperatures, resulting in permafrost degradation or ground failure. Rapidly warming temperatures during break-up can cause ice jams to release, resulting in flooding of communities and erosion.

Nature

Earth's 2015 surface temperatures were the warmest since modern record keeping began in 1880, according to independent analyses by NASA and the National Oceanic and Atmospheric Administration (NOAA).

Globally-averaged temperatures in 2015 shattered the previous mark set in 2014 by 0.23 degrees Fahrenheit (0.13 Celsius). Only once before, in 1998, has the new record been greater than the old record by this much.

The 2015 temperatures continue a long-term warming trend, according to analyses by scientists at NASA's Goddard Institute for Space Studies (GISS) in New York. NOAA scientists concur with the finding that 2015 was the warmest year on record based on separate, independent analyses of the

[6] https://www.homefacts.com/earthquakes/Alaska/Yukon-Koyukuk-Census-Area/Mcgrath.html (Accessed 4/26/2018).

data. Because weather station locations and measurements change over time, there is some uncertainty in the individual values in the NASA index. Taking this into account, NASA analysis estimates 2015 was the warmest year with 94 percent certainty.

Referring to the data released, NASA Administrator Charles Bolden says, "Climate change is the challenge of our generation, …[this] is a key data point that should make policy makers stand up and take notice - now is the time to act on climate." (NASA, 2017)

The planet's average surface temperature has risen about 1.8 degrees Fahrenheit (1.0 degree Celsius) since the late-19th century, a change largely driven by increased carbon dioxide and other human-made emissions into the atmosphere (NASA, 2017).

General Impacts

Over the past 60 years, the average temperature across Alaska has increased by approximately 3°F. This increase is more than twice the warming seen in the rest of the United States. Warming in the winter has increased by an average of 6°F and has led to changes in ecosystems, such as earlier breakup of river ice in the spring. As the climate continues to warm, average annual temperatures in Alaska are projected to increase an additional 2 to 4°F by the middle of this century. Precipitation in Alaska is projected to increase during all seasons by the end of this century. Despite increased precipitation, the state is likely to become drier due to greater evaporation caused by warming temperatures and longer growing seasons (Chapin, et al., 2014) (EPA, 2017).

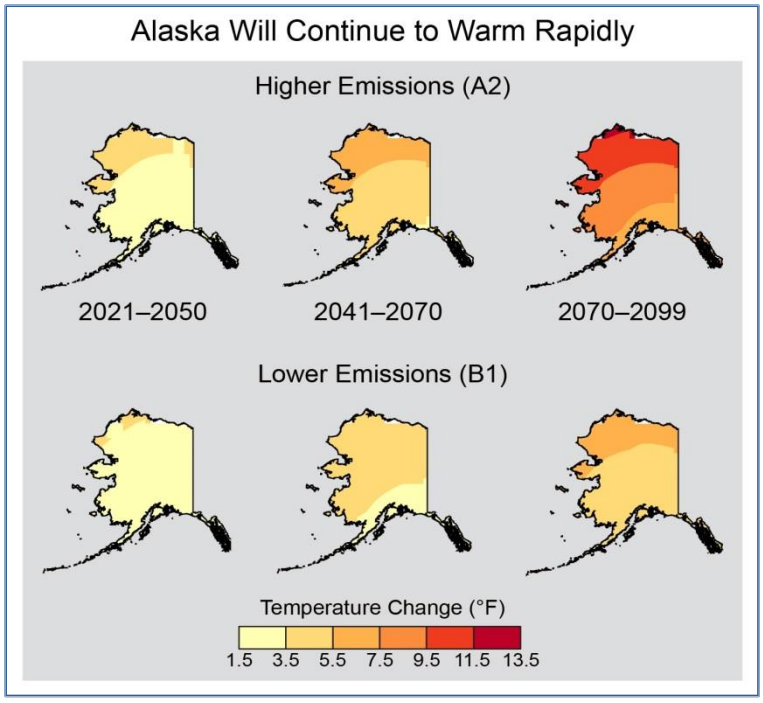


Figure 4-6 Alaska Warming

Rising temperatures may provide some benefits in Alaska, such as a longer growing season for agricultural crops, increased tourism, and access to natural resources that are currently inaccessible due to ice cover, like offshore oil. However, climate change is also having adverse effects on many ecosystems and species, and is creating new hardships for Alaska Natives and their access to subsistence resources.

Future Occurrence

Northern latitudes are warming faster than more temperate regions, and Alaska has already warmed much faster than the rest of the country. The maps in show changes in temperature (relative to 1971-1999) projected for Alaska in the early, middle, and late parts of this century, if heat-trapping gas (also known as greenhouse gas) emissions continue to increase (higher emissions, A2), or are substantially reduced (lower emissions, B1) (Stewart B. C., Kunkel, Stevens, & Sun, 2013).

4.4 Vulnerability

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis is divided into five steps: asset inventory, methodology, data limitations, exposure analysis for current assets, and areas of future development.

Table 4-8 lists the infrastructure hazard vulnerability for McGrath.

The requirements for a vulnerability analysis as stipulated in DMA 2000 and its implementing regulations are described here.

- A summary of the community's vulnerability to each hazard that addresses the impact of each hazard on the community.
- Identification of the types and numbers of RL properties in the identified hazard areas.
- An identification of the types and numbers of existing vulnerable buildings, infrastructure, and critical facilities and, if possible, the types and numbers of vulnerable future development.
- Estimate of potential dollar losses to vulnerable structures and the methodology used to prepare the estimate.

Table 4-8 Vulnerability Overview for the City of McGrath & McGrath Native Village

Hazard	Percent of McGrath's Geographic area	Percent of Population	Percent of Building Stock	Percent of Community Facilities and Utilities
Flood	100%	100%	100%	100%
Erosion	14%	16%	14%	50%
Fire	100%	100%	100%	100%
Severe Weather	100%	100%	100%	100%
Subsidence	100%	100%	100%	100%
Earthquake	100%	100%	100%	100%

4.4.1 Asset Inventory

Asset inventory is the first step of a vulnerability analysis. Assets that may be affected by hazard events include population (for community-wide hazards), residential buildings (where data is available), and critical facilities and infrastructure. The assets and associated values throughout McGrath are identified and discussed in detail in the following sections.

Homes

Population data for the City of McGrath was obtained from State of Alaska Website of 2010 U.S. Census, and the Department of Labor Division of Research and Analysis (DOL DRA). The City of McGrath's total population for 2010 was 346 with a 2018 estimate of 295. Table 4-9 estimates the cost of replacing 195 residential buildings in McGrath including materials, freight, labor and installation of sanitation infrastructure.

The value of residential buildings is presented here as the cost to provide a new home based on the Interior Regional Housing Authority reported average cost of construction for a single-family home in a barge-in community range $325,000 to $375,000[7]. Installation of new sanitation infrastructure estimated by Indian Health Service (HIS) Sanitation Tracking and Reporting System (STARS) in a similar community (Huslia) for 2017 is $183,333.

New home estimate:
$350,000 + $183,333 ≅ $533,333.

Table 4-9 Estimated Population and Homes Valuation

Population		Residential Buildings	
2010 Census	AKDL&WD 2018 Estimate	Total Residential Building Count 2010	Total Value of Residential Buildings
346	295	195	$104, 000,000

Sources: City of Mcgrath U.S. Census 2010, and DOL DRA.
1 Average replacement value of all single-family residential buildings with new well installation estimated $434,000 per structure.

The cost of moving a home has been reported by a similar interior village (Huslia) for 2017[8]. Including installation of new sanitation infrastructure:

Relocate home cost
Local Labor $6,000
Equipment $19,250
Water & Sewer $183,333

Existing Critical Facilities and Infrastructure

A critical facility is defined as a facility that provides essential products and services to the general public, such as preserving the quality of life in the City of McGrath and fulfilling important public safety, emergency response, and disaster recovery functions. The critical facilities profiled in this plan include the following:

- Government facilities, such as city and tribal administrative offices, departments, or agencies
- Emergency response facilities, including police, Village Public Safety Officer (VPSO), fire, and Code Red equipment
- Educational facilities, including K-12
- Care facilities, such as medical clinics, congregate living health, residential and continuing care, and retirement facilities
- Community gathering places, such as community and youth centers
- Utilities, such as electric generation, communications, water and waste water treatment, sewage lagoons, landfills

[7] Telephone inquiry with IRHA home builder Donovan Ketzler Sept. 6, 2017
[8] Reported by Huslia City Administrator and Planning Committee Lead, Elsie Vent Sept 14, 2017

There are a few structures owned by MTNT Ltd village corporation, which are considered critical for McGrath, which are listed in Table 4-10, but were not analyzed in HAZUS-MH. Table 4-11 is an inventory of public facilities owned by the City of McGrath.

Table 4-10 McGrath Native Village Critical Facility Inventory

Facility Type	Facility Name	Location	Replacement Value	Occupancy
Private Property	Innoko Hotel Building		$250,000	varies
Utilities (MTNT Ltd owned)	McGrath Light & Power Bldg.	N62.95661 W155.59695	$1,000,000	1 Person
	McGrath Light & Power Generators x 3		$30,000 ($10,000 each)	N/A
Community Facilities	McGrath Native Village Community Center	N62.572095 W155.354956	$500,000	10 People
Fuel Storage	McGrath ANV 1 tank		$10,000	N/A

Table 4-11 City of McGrath Critical Facility Inventory

Facility Type	Facility Name	Location	Replacement Value	Occupancy
Government Facilities	City Office	Cap'n Snow Center	N/A	3 People

Table 4-12 and Table 4-13 estimate the total replacement value of dwellings and critical facilities. Structure values were obtained during the asset data inventory during the spring of 2015 with some values compiled in March and April, 2018.

Table 4-12 McGrath Village Loss Estimates by Occupancy Class

Type (Occupancy Class)	Total Count	Estimated Value	Contents	
			HAZUS Contents Value (%) by Occupancy Class	Estimated Value of Contents
Residential	0		50%	
Commercial	1	$500,000	100%	$500,000
Industrial	1	$1,000,000	150%	$1,500,000
Religious/Non-Profit	0		100%	
Government	1	$250,000	150%	$375,000
Infrastructure	1	$30,000	N/A	N/A
Total	4	$1,780,000	NA	$2,375,000

Table 4-13 McGrath City Loss Estimates of Facility by Occupancy Class

Type (Occupancy Class)	Total Count	Estimated Value	Contents	
			HAZUS Contents Value (%) by Occupancy Class	Estimated Value of Contents
Residential	195	$45,792,435	50%	$22,896,218
Commercial	16	$11,800,000	150%	$17,700,000
Industrial	0	$0	150%	$0
Religious/Non-Profit	6	$3,540,000	100%	$3,540,000
Government	15	$10,331,000	150%	$15,496,500
Educational	6	$44,600,000	150%	$66,900,000
Infrastructure	52	$32,125,000	NA	$0
Total	290	$148,188,435	NA	$126,532,718

Note: Estimated value of contents does not include values for the Infrastructure category (not available in HAZUS-MH). Therefore, the Infrastructure value represents the total insured value of all utilities.

Table 4-14 and Table 4-15 provide the facility functional value by occupancy class. The functional value is the sum of structure and content value.

Table 4-14 McGrath Native Village Facility Functional Value Estimates

Type (Occupancy Class)	Total Count	Estimated Value of Structure	Contents	
			Estimated Value of Contents	Functional Value
Residential	0	$	$	$
Commercial	1	$500,000	$500,000	$1,000,000
Industrial	1	$1,000,000	$1,500,000	$2,500,000
Religious/Non-Profit	0	$	$	$
Government	1	$250,000	$375,000	$625,000
Infrastructure	1	$30,000	N/A	N/A
Total	4	$1,780,000	$2,375,000	$4,125,000

Table 4-15 City of McGrath Facility Functional Value Estimates

Type (Occupancy Class)	Total Count	Estimated Value of Structure	Contents	
			Estimated Value of Contents	Functional Value
Residential	195	$45,792,435	$22,896,218	$68,688,653
Commercial	16	$11,800,000	$17,700,000	$29,500,000
Industrial	0	$0	$0	$0
Religious/Non-Profit	6	$3,540,000	$3,540,000	$7,080,000
Government	15	$10,331,000	$15,496,500	$25,827,500
Educational	6	$44,600,000	$66,900,000	$111,500,000
Infrastructure	52	$32,125,000	$0	$32,125,000
Total	290	$148,188,435	$126,532,718	$274,721,153

Table 4-16 McGrath Native Village Facilities Risk Assessment

Hazard	Community Facilities			
	No.	Structure Value	Contents Value	Functional Value
Flood	4	$1,780,000	$2,375,000	$4,125,000
Erosion	0			
Wildfire	4	$1,780,000	$2,375,000	$4,125,000
Severe Weather	4	$1,780,000	$2,375,000	$4,125,000
Subsidence	4	$1,780,000	$2,375,000	$4,125,000
Earthquake	4	$1,780,000	$2,375,000	$4,125,000

Table 4-17 City of McGrath Facilities Risk Assessment

Hazard	Residential Structures					Community Facilities				Total			
	Pop	No.	Structure Value	Contents Value	Functional Value	No.	Structure Value	Contents Value	Functional Value	No.	Structure Value	Contents Value	Functional Value
Flood	315	195	$45,792,435	$22,896,218	$68,688,653	95	$102,396,000	$103,636,500	$206,032,500	290	$148,188,435	$126,532,718	$274,721,153
Erosion	50	11	$2,583,163	$1,292,582	$3,875,745	9	$55,500,000	$83,250,000	$138,750,000	20	$58,083,163	$84,542,582	$142,625,745
Wildfire	315	195	$45,792,435	$22,896,218	$68,688,653	95	$102,396,000	$103,636,500	$206,032,500	290	$148,188,435	$126,532,718	$274,721,153
Severe Weather	315	195	$45,792,435	$22,896,218	$68,688,653	95	$102,396,000	$103,636,500	$206,032,500	290	$148,188,435	$126,532,718	$274,721,153
Subsidence	315	195	$45,792,435	$22,896,218	$68,688,653	95	$102,396,000	$103,636,500	$206,032,500	290	$148,188,435	$126,532,718	$274,721,153
Earthquake	315	195	$45,792,435	$22,896,218	$68,688,653	95	$102,396,000	$103,636,500	$206,032,500	290	$148,188,435	$126,532,718	$274,721,153

Risk Analysis Methodology
The planning team used the State's Critical Facility Inventory and locally obtained GPS coordinate data to identify critical facility locations in relation to potential hazard's threat exposure and vulnerability (Tables 4-10 and 4-11). The data was used to model an exposure assessment for each hazard where applicable.

Table 4-18 Critical Infrastructure in Alaska

Fire Stations	Satellite Facilities	Reservoirs & Water Supply Lines
Police Stations	Community Washeterias	National Guard Facilities
Emergency Operations Centers	Harbors / Docks / Ports	Community Freezer Facilities
Hospitals, Clinics, & Assisted Living Facilities	Landfills & Incinerators	
Water & Waste Water Treatment Facilities	Power Generation Facilities	
Fuel Storage Facilities	Oil & Gas Pipeline Structures & Facilities	
Community Halls & Civic Centers	Any Designated Emergency Shelter	
Airports	Community Cemeteries	
Schools	Community Stores	
Telecommunications Structures & Facilities	Service Maintenance Facilities	
	Critical Bridges	
	Radio Transmission Facilities	

(Alaska, State of Alaska Hazard Mitigation Plan, 2013)

Replacement structure and contents value estimates were provided by the U.S. Census and the planning team. An exposure analysis was conducted for each physical asset located within a hazard area. A similar analysis was used to evaluate the proportion of the population at risk. However, the analysis simply represents the number of people at risk; no casualty estimates were prepared.

Data Limitations
The vulnerability estimates provided herein use the best data currently available, and are designed to approximate risk. Results are limited to the exposure of the built environment. This Plan did not estimate the range of injuries.

4.5 Risk Assessment Summaries

Flood
The total elevation gain in the McGrath vicinity is no more than 4 feet above the riverbank. Therefore, the entire population, residential structures and community facilities are vulnerable to floods. This includes 315 people in 195 residences valued at $68,688,653 and all 95 critical facilities worth approximately $206,032,500. The total economic loss estimate is $274,721,153.

Erosion
Based on the USACE baseline erosion assessment and local knowledge, the City has 50 people in 11 homes worth $3,875,745 and 9 community facilities worth approximately $138,750,000 located within 60 feet of the riverbank. The current gradual erosion rate is six feet minimum per year.

However, the NRCS riverbank stabilization projects may have reduced the annual erosion rate along the most critical areas. Based on estimates of potential erosion in 15 years, any structures within 100 feet of the riverbank would likely be at risk. Based on Tables 4-16 and 4-17

A. Population
Approximately 50 people may be considered an immediate risk or 16 percent of the community's population, based on the estimated number of residences or facilities that would be impacted by erosion.

B. Critical Facilities
Approximately 50 percent of the community's critical facilities are vulnerable.

C. Non Critical Facilities
Approximately 6 percent of the community's dwellings are vulnerable.

D. Loss Estimate
The economic loss resulting from this hazard is approximately $142,625,745 (Table 4-16 and Table 4-17).

Wildland Fire
Although the probability is low, the entire population of McGrath, residential structures and community facilities are vulnerable to wildland fires. This includes 315 people in 195 residences valued at $68,688,653 and all 95 critical facilities worth approximately $206,032,500. The total economic loss estimate is $274,721,153.

Severe Weather
The entire population of McGrath, residential structures and community facilities are vulnerable to severe weather. This includes 315 people in 195 residences valued at $68,688,653 and all 95 critical facilities worth approximately $206,032,500. The total economic loss estimate is $274,721,153.

Subsidence
The entire population of McGrath, residential structures and community facilities are vulnerable to subsidence. This includes 315 people in 195 residences valued at $68,688,653 and all 95 critical facilities worth approximately $206,032,500. The total economic loss estimate is $274,721,153.

Earthquake
The City of McGrath and surrounding area may experience mild to significant earthquake ground movement sufficient to damage infrastructure. Although all structures are exposed to earthquakes, buildings constructed of wood exhibit more flexibility than those composed of unreinforced masonry, (URM).

Given its location, it is unlikely that an earthquake would be centered in an area around McGrath. However, the entire population, residential structures and critical facilities are vulnerable to an earthquake. All 315 people in 195 homes worth $68,688,653 and all 95 critical community facilities worth $206,032,500 are vulnerable. The total economic loss is approximately $274,721,153.

4.6 NFIP and Repetitive Loss Properties

The City of McGrath has participated in the NFIP since 2002. One City staff member attended NFIP training in 2003. The City's FIRM status originated on October 4, 2011, and the community has recently been mapped (see **Figure 4-2 Firm Map - McGrath, AK**). Also in 2011, two City representatives attended NFIP training and the City code established the Base Flood Elevation (BFE) at 340 feet. The BFE is two feet above the 338 feet listed in the FIRM, which requires an elevation certification issued by a licensed surveyor, if

property is located in a flood zone. As of mid-July, 2018, the City has received a quote from a licensed surveyor to mark the BFE on utility poles throughout the area, in accordance with the City code.

The City of McGrath and McGrath Native Village have not developed an inventory of properties that meet the RL or SRL criteria. This has been identified by the Planning Committee as a low priority. However, the NFIP Insurance Report states the City of McGrath has a total of 5 insured properties. The remaining property locations are not known as of this report. The City's total NFIP coverage is $2,235,000.

Repetitive loss properties have had at least two $1,000 claims within any 10-year period since 1978. SRL properties have experienced four or more separate building and content claims since 1978 each exceeding $5,000 with cumulative claims exceeding $20,000; or at least two separate building claims with cumulative losses exceeding the value of the main living structure.

4.7 Land Use and Development Trends

Land Use

Land use is predominately residential with some areas of commercial and community facilities. Suitable developable vacant land is in short supply within the boundaries of the City as it is contained within an oxbow of the Kuskokwim River. One area of town is classified as airport land use. The Alaska Department of Natural Resources maintains a wildland fire management facility near the airport.

The City has no formal zoning and community enacted land use controls. Community lands are designated for institutional land uses such as schools and government facilities. The community has also designated lands for hunting and recreation. People may not actively hunt within the City.

Development Trends

Table 4-19 City of McGrath Project History lists recent infrastructure improvement projects for McGrath.

Table 4-19 City of McGrath Project History

Lead Agency	Fiscal Year	Project Description
NRCS	2010	Riverbank Stabilization Project Phase I
NRCS	2012	Riverbank Stabilization Project Phase II
NRCS	2016	?
Village Safe Water	2016	Water Treatment Plant Upgrade

5 Capability Assessment

5.1 Capability Assessment

This section outlines the resources available to the City and Tribal Council of McGrath for mitigation actions, funding, and training. Table 5-1 delineates the City's regulatory tools. While the McGrath Tribal Council is a sovereign and federally recognized tribe, they are not a regulatory authority in the vicinity of McGrath. Tables 5-2 and 5-3 identify technical specialists, and financial resources available for project management through the City and Tribe.

Table 5-1 Management Tools

Regulatory Tools (ordinances, codes, plans)	Existing?	Comments (Year of most recent update)
Comprehensive Plan	Yes	The City Comprehensive Plan 1982
Economic Plan	Yes	City plan for the years 2004-2009
Erosion Assessment	Yes	USACE Alaska Baseline Erosion Assessment City of McGrath Information Paper, May 21, 2008
Flood Insurance Study	Yes	Community needs one as they participate in the NFIP
Land Use Plan	Yes	McGrath Community Plan 2013
Transportation Plan	Yes	McGrath Community Plan 2013
Tribal Corporation Land Use Plan	No	The native corporation doesn't manage tribal land in McGrath.
Emergency Response Plan	No	
Wildland Fire Protection Plan	No	
Building codes	No	The City can exercise this authority
Fire Insurance Rating	No	The City can exercise this authority
Zoning ordinances	No	The City can exercise this authority
Subdivision ordinances or regulations	No	The City can exercise this authority
Special purpose ordinances	Yes	The City adopted a 2 foot freeboard minimum building elevation for construction (Base Flood Elevation is 338 feet)

Table 5-2 Technical Specialists

Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner or engineer with knowledge of land development and land management	No	The City may contract this service.
Engineer or professional trained in construction practices related to buildings	No	Engineer work is contracted.

Staff/Personnel Resources	Y/N	Department/Agency and Position
Planner or engineer with an understanding of natural and/or human-caused hazards	No	McGrath contracts consultants with hazard mitigation knowledge.
Floodplain Manager	No	McGrath consults with the State Floodplain Manager.
Surveyors	No	Survey work is contracted.
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	No	The State of Alaska is consulted for HVAs.
Personnel skilled in Geospatial Information System (GIS) and/or Hazards Us-Multi Hazard (Hazus-MH) software	No	HAZUS and Geospatial work is either contracted or supplied by federal & state resources.
Scientists familiar with the hazards of the jurisdiction	No	No scientists on staff. US Fish and Wildlife Service local office; Alaska Department of Fish and Game local office.
Emergency Manager	No	The City may contract this service.
Grant Writers	No	The City may contract this service.
Public Information Officer	No	McGrath leadership may appoint or delegate this authority.

Table 5-3 Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	No
Community Development Block Grants	Yes
Capital Improvement Project Funding	Yes
Authority to levy taxes for specific purposes	City – Yes, Tribe - No
Incur debt through general obligation bonds	No
Incur debt through special tax and revenue bonds	No
Incur debt through private activity bonds	No
Hazard Mitigation Grant Program (HMGP)	Yes
Hazard Mitigation Technical Assistance Program (HMTAP)	Yes
Earthquake Hazards Reduction Program (EHRP)	Yes
Pre-Disaster Mitigation (PDM) grant program	Yes

Table 5-3 Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
Flood Mitigation Assistance (FMA) grant program	Yes
United State Fire Administration (USFA) Grants	Yes
Fire Mitigation Fees	No

The City of McGrath City and McGrath Native Village depend upon any available government and private grants for much of their mitigation projects. With an approved hazard mitigation plan, which in this case is the multi-jurisdictional plan, McGrath Native Village may apply directly to FEMA for grants or apply through the State. If McGrath Native Village applies to the State for FEMA mitigation grants, the State may pay the required matching funds. Any Tribe may also apply to other local governing entities such as the City, or to a parent corporation for financial assistance.

5.2 State Mitigation Funding

5.2.1 Direct State Disaster Mitigation Funding

While the State of Alaska has Public Assistance and Individual Assistance programs under State declared disasters, it does not have a State disaster mitigation program. However, there have been a few occasions in which the Governor and/or Legislature have elected to identify and fund mitigation work through the State Disaster Relief Fund (DRF). These actions were taken under discretionary authority and no permanent State mitigation program was established.

5.2.2 State Provision of Non-Federal Match to Federal Mitigation Programs

Many federal mitigation programs require a local match of non-federal funds. The match required varies with the program regulations and community being granted funds. There are several mitigation programs in which the State of Alaska provides the entire non-federal match for local communities resulting in 100% funds being granted to the community for mitigation. These programs, described in detail below, include the Public Assistance (also called 406 mitigation grants under Section 406 of the Stafford Act) and Hazard Mitigation Grant Program (HMGP) which are funded under federally declared disasters. The matching funds are paid through the State DRF. Therefore, while these programs are listed below under “Federal mitigation programs” for convenience, the State provides substantial funding for these programs, sometimes in the millions of dollars. On occasion the State has likewise provided a portion of the non-Federal match for NRCS projects.

5.2.3 State of Alaska Supporting Mitigation Programs

Division of Homeland Security and Emergency Management Disaster Relief Fund

The State of Alaska provides State funding for Public Assistance (PA) and Individual Assistance (IA) in State declared disasters and cost share funds for federally declared disasters through the State Disaster Relief Fund.

Department of Commerce, Community & Economic Development Community Development Block Grants
These grants fund community projects and planning activities improving health, safety and essential community services.

Alaska Regional Development Organizations
The Alaska Regional Development Organizations (ARDORs) funds cooperative economic development.

Rural Development Assistance Mini-Grants
These grants partially fund plan development, feasibility engineering studies, and capital projects. Mini-grants are awarded by the State Legislature.

Unincorporated Community Grants
These grants are awarded by the State Legislature to unincorporated communities and nonprofits for a wide range of projects and programs.

For more information on federal grants, see Appendix 9 and go to https://www.fema.gov/hazard-mitigation-grant-program.

6 Mitigation Goals and Strategies

This section outlines the process used by the Planning Committee for preparing a mitigation strategy including:

- Developing Mitigation Goals
- Identifying Mitigation Actions
- Evaluating Mitigation Actions
- Implementing Mitigation Action Plans

6.1 Developing Mitigation Goals

Results from the risk assessment were used to develop mitigation goals and actions. Referencing the City of McGrath's Hazard Mitigation Plan, which was approved by FEMA in 2009, the community accomplished one of their five goals with assistance from NRCS (Table 6-1). Additionally, the McGrath City and Tribal councils decided to develop new goals and retain any pertinent goals from their 2009 FEMA-approved HMP (Table 6-2). Since this HMP is multi-jurisdictional, both the McGrath City and Tribal Councils reviewed and prioritized the goals and actions.

Table 6-1 Accomplished Goals and Actions (see page 6-9 for complete status list)

No.	Goal and Objectives from 2009 HMP
1	Reduce impacts of erosion on the community – Accomplished August-2014
1.1	Develop a flood and all-hazards mitigation plan – Accomplished August-2009
1.2	Increase public awareness of erosion damage – Accomplished fall 2009
1.3	Install erosion control – Accomplished August 2014

Table 6-2 Mitigation Goals

No.	Goal Description
1	Reduce the risk of flood damage.
2	Reduce the risk of erosion damage.
3	Reduce the risk of wildland fire damage.
4*	Promote public awareness of all natural hazards in the area.
5	Develop a coordinated community response to natural disasters.
6*	Reduce the risk of damage from ground failure.
7	Reduce the community's vulnerability to earthquake damage.
8	Implement HMP goals and actions into other Tribal and City plans and projects.
9	Reduce the risk of severe weather damage.

*= Goals retained from City of McGrath 2009 HMP

6.2 Identifying Mitigation Actions

During the public meeting on April 22, 2015, the City and Tribe of McGrath reviewed their local capabilities and developed their mitigation actions (Table 6-3). Mitigation actions are activities, measures, or projects supporting the goals of a mitigation plan.

Table 6-3 Mitigation Actions

Goals		Actions	
No.	Description	ID	Description
1	Losses due to Flooding will be reduced or eliminated.	1.1	Develop and maintain an inventory for all structures located within 100- year and 500-year floodplains.
		1.2	Develop and maintain a map of residential and commercial buildings within 100-year and 500-year floodplains.
		1.3	Develop and maintain an inventory of locations subject to frequent storm water flooding based on historical flood data.
		1.4	Develop, implement, and enforce floodplain management ordinances.
		1.5	Acquire (buy-out), relocate, elevate, or otherwise flood-proof public and private buildings.
		1.6	Coordinate with the State Floodplain Manager to explain NFIP participation benefits and regulations and promote continued compliance with the NFIP.
		1.7	Install, monitor, and maintain streamflow gages upriver and downriver.
		1.8	Extend, elevate, and reinforce the levy along the riverbank.
		1.9	Participate in the RiskMap program.
2	Losses due to Erosion will be reduced or eliminated.	2.1	Relocate buildings away from the riverbank.
		2.2	Apply for assistance to implement riverbank protection methods.
		2.3	Extend the rip rap lining the riverbank.
3	Losses due to Fire will be reduced or eliminated.	3.1	Create fire breaks
		3.2	Promote FireWise building design, sites, and construction.
4	Develop a coordinated Community response to natural disasters.	4.1	Form an emergency advisory task force.
		4.2	Develop a local emergency communication plan.
		4.3	Develop an evacuation plan for the community
		4.4	Encourage residents to develop a home evacuation and a long term relocation plan
		4.5	Investigate opportunities to participate in the National Warning system and receive weather warning information from the NWS
		4.6	Develop a Small Community Emergency Response Plan (SCERP) plan with assistance from Alaska DHS&EM
5	Promote public awareness of all natural hazards in the area.	5.1	Produce and distribute information materials concerning mitigation, preparedness, and safety procedures for all natural hazards.
		5.2	Develop and implement strategies and educational outreach programs addressing the benefits of mitigating natural hazard events.
6	Losses due to Severe Weather will be reduced or eliminated.	6.1	Encourage use of weather resistant materials and construction techniques.
		6.2	Educate residents to the risks of severe weather.
		6.3	Research available grant opportunities for a backup power system.
7	Losses due to Ground Failure/Subsidence will be reduced or eliminated.	7.1	Promote permafrost sensitive construction practices.
		7.2	Elevate and reinforce roads against subsidence and frost heaving.
		7.3	Elevate or reinforce homes and critical infrastructure against subsidence.
8	Losses due to Earthquake will be reduced or eliminated.	8.1	Teach the community how to protect themselves during an earthquake.
		8.2	Educate the community about ways to mitigate structural and non-structural damage from earthquakes.
		8.3	Encourage use of earthquake resistant materials and construction practices

Table 6-3 Mitigation Actions

Goals		Actions	
No.	Description	ID	Description
		8.4	Encourage all future public structure development meets international requirements for seismic protection.
		8.5	Evaluate structures for seismic retrofits.
9	Implement HMP goals and actions into other Tribal and City plans and projects	9.1	Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.
		9.2	Integrate HMP risk assessments, goals, and actions into capital projects.

The City and Tribe of McGrath have not completed a detailed cost benefit analysis for all of their selected mitigation actions. However, cost-benefit methodology was addressed during the public planning forum.

6.3 Evaluating and Prioritizing Mitigation Actions

The planning team evaluated and prioritized each local hazard and corresponding mitigation action in 2015. The selected mitigation actions are included in the Mitigation Action Plan. The Mitigation Action Plan represents mitigation projects and programs to be implemented through the cooperation of the community.

The planning team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (Table 6-4) and the Benefit-Cost Analysis Fact Sheet (Appendix 5) considering the opportunities and constraints of each mitigation action. Each action considered for implementation is accompanied by a qualitative statement addressing the benefits, costs and, where available, a technical feasibility study. A detailed cost-benefit analysis is anticipated as part of the project application process.

Table 6-4 Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…"	Considerations
Social	The public support for the overall mitigation strategy and specific mitigation actions.	Community acceptance. Adversely affects population.
Technical	If the mitigation action is technically feasible and if it is the whole or partial solution.	Technical feasibility. Long-term solutions Secondary impacts.
Administrative	If the community has the appropriate personnel and administrative capabilities or if outside help is necessary.	Staffing. Funding allocation. Maintenance/operations.
Political	Public perceptions related to the environment, economic development, safety, and emergency management.	Political support. Local champion. Public support.
Legal	Whether the community has the legal authority to implement the action, or whether the community must pass new regulations.	Local, State, and Federal authority. Potential legal challenge.

Table 6-4 Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…"	Considerations
Economic	If current or future funding sources may be applied. If the costs seem reasonable for the size of the project. If enough information is available to complete a Federal Emergency Management Agency (FEMA) Benefit- Cost Analysis.	Benefit/cost of action Contributes to other economic goals. Outside funding required. FEMA Benefit-Cost Analysis.
Environmental	The impact on the environment because of public desire for a sustainable and environmentally healthy community.	Effect on local flora and fauna Consistent with community environmental goals. Consistent with local, state, and Federal laws.

The planning team prioritized their mitigation actions according to the hazard vulnerability assessment. The team selected a high, medium, and low rating system. Actions receiving a High priority address hazards impacting the community on an annual or near annual basis and damage to critical facilities or people. Actions receiving a medium priority address hazards impacting the community less frequently and are typically not a threat to critical facilities or people. Actions receiving a low priority rarely impact the community and have rarely impacted critical facilities or people. The planning team emphasized projects to reduce risk on both planned and current buildings and infrastructure.

The Mitigation Action Priority Matrix, Table 6-5, arranges goals for the Mitigation Action Plan Table 6-6.

Table 6-5 Mitigation Action Priority Matrix

Goals		Priority	Action
1	Reduce the risk of flood damage.	HIGH	1.5 – Acquire (buy out), relocate, elevate, or otherwise flood-proof public and private buildings.
			1.6 – Coordinate with the State Floodplain Manager to explain NFIP participation benefits and regulations and promote continued compliance with the NFIP. This includes marking 340 ft. Base Flood Elevation on hydrants and buildings within the City.
			1.7 – Install, monitor, and maintain streamflow gages upriver and downriver.
			1.8– Extend and reinforce the levy along the riverbank.
			1.9 – Participate in the RiskMap program.
2	Reduce the risk of erosion damage.		2.2 - Apply for assistance to implement riverbank protection methods.
			2.3 - Extend the rip rap lining the riverbank.
3	Reduce the risk of fire damage.		3.2 – Promote FireWise building design, sites, and construction.
4	Implement HMP goals and actions into other Tribal and City plans and projects.		4.1 – Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.
			4.2 – Integrate HMP risk assessments, goals, and actions into capital improvement, emergency management, and other community projects.
5	Develop a coordinated community response to natural disasters.		5.2 – Develop a local emergency communication plan.
			5.3 – Develop an evacuation plan for the community.
			5.4 – Encourage residents to develop a home evacuation plan and a long term relocation plan.
			5.6 – Develop a Small Community Emergency Response Plan (SCERP) with assistance from Alaska State DHS&EM.
6			6.1 – Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.

Table 6-5 Mitigation Action Priority Matrix

Goals		Priority	Action
	Implement HMP goals and actions into other Tribal and City plans and projects.		6.2 – Integrate HMP risk assessments, goals, and actions into capital improvement, emergency management, and other community projects.
7	Reduce risk of severe weather damage.	MEDIUM	7.1 – Promote use of weather resistant materials and construction techniques.
			7.2 – Educate residents to the risks of severe weather.
8	Reduce the risk of damage from ground failure.		8.1 – Promote permafrost sensitive construction practices.
			8.2 – Elevate and reinforce evacuation roads against subsidence and frost heaving.
			8.3 – Elevate and reinforce homes and critical infrastructure against subsidence and frost heaving.
9	Promote public awareness of all natural hazards in the area	LOW	9.1 – Produce and distribute information materials concerning mitigation, preparedness, and safety procedures for all natural hazards.
10	Reduce the community's risk to earthquake damage.		10.1 – Teach the community how to protect themselves during an earthquake.
			10.2 – Educate the community about ways to mitigate structural and non-structural damage from earthquakes.

On July 24, 2017, the City of McGrath and the McGrath Native Village Council reviewed the list, and chose to implement eight mitigation actions into their mitigation action plan. The results are shown in Table 6-6.

Table 6-6 Mitigation Action Plan

1.5	**Action Item**	**Acquire (buy out), relocate, elevate, or otherwise flood-proof public and private buildings**
	Ranking	High
	Department / Agency	McGrath, DHS&EM, FEMA, USACE, NRCS
	Potential Funding Source	HMGP, DR-4122 & 4094 mitigation, PDM Grants
	Implementation Timeline	1 to 5 years
	Benefit-Costs	This mitigation action reduces the community's flood risk.
	Action Item	**Coordinate with the State Floodplain Manager to explain NFIP participation benefits and regulations and promote continued compliance with the NFIP**
	Ranking	High
	Department / Agency	McGrath, DCCED, FEMA

Table 6-6 Mitigation Action Plan

1.6	Potential Funding Source	DHS Preparedness Technical Assistance Program; HMGP; PDM Grants
	Implementation Timeline	Ongoing
	Benefit-Costs	This action promotes community involvement in preventing flood damage.
1.7	**Action Item**	**Install, monitor, and maintain streamflow gages upriver and downriver**
	Ranking	High
	Department / Agency	McGrath, DHS&EM, USACE, FEMA, USGS, NOAA/NWS
	Potential Funding Source	HMGP; PDM Grants, NOAA, Rasmussen, Lindbergh
	Implementation Timeline	1 to 5 years
	Benefit-Costs	This mitigation action will warn the community, State, and federal agencies of high river levels and blockages.
1.8	**Action Item**	**Extend and reinforce the levy along the riverbank.**
	Ranking	High
	Department / Agency	McGrath, USACE
	Potential Funding Source	USACE, HMPG, Federal / State grants
	Implementation Timeline	1 to 5 years
	Benefit-Costs	Ensure the evacuation routes will function during a flood event.
1.9	**Action Item**	**Participate in the RiskMap program**
	Ranking	High
	Department / Agency	McGrath, DCCED/DCRA, FEMA/STAR
	Potential Funding Source	FMA, Federal / State grants
	Implementation Timeline	1 to 5 years
	Benefit-Costs	Develop accurate floodplain mapping for improved flood risk appraisal and mitigation actions.
5.6	**Action Item**	**Develop a Small Community Emergency Response Plan (SCERP) with assistance from Alaska State DHS&EM.**
	Ranking	High
	Department / Agency	McGrath, DHS&EM
	Potential Funding Source	DHS&EM
	Implementation Timeline	1 to 2 years
	Benefit-Costs	An inexpensive and proven method of coordinating local emergency response efforts.
8.1	**Action Item**	**Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.**
	Ranking	Medium
	Department / Agency	McGrath, DHS&EM, FEMA, NWS, USGS,
	Potential Funding Source	HMTAP, FEMA HMGP, NWS
	Implementation Timeline	1 to 5 years
	Benefit-Costs	Improves communication and coordination of multiple community planning efforts. https://www.fema.gov/hmgp-faqs

8.2	**Action Item**	**Integrate HMP risk assessments, goals, and actions into capital improvement, emergency management, and community projects.**
	Ranking	Medium
	Department / Agency	McGrath, DHS&EM, FEMA, NWS, USGS,
	Potential Funding Source	HMTAP, FEMA HMGP, NWS
	Implementation Timeline	1 to 5 years
	Benefit-Costs	Improves communication and coordination of multiple community projects.

Action items from 2009 Hazard Mitigation Plan with updated status.

EROSION

Mitigation Action	Status
Relocation of infrastructure	Carried forward to 2017 plan - Fall 2018, moving one home under consideration.
Prioritize infrastructure	Ongoing - Two phases of erosion control revetment installed; planning 3rd phase underway in fall 2018; annually inspected by City.
Create City fund for erosion	Completed - Fund was created in the City's FY 18 Operating Budget
ID sources for erosion funding	Ongoing - Resource guide: Understanding and Evaluating Erosion Problems; communication with NRCS and AK Homeland Security
Create local erosion task force	No action taken
Prohibit new construction in erosion zones	No action taken
Detailed mapping of erosion zones	Completed - NRCS mapped the riverbank in the assessment phase of the Emergency Watershed Protection project
Public education	Ongoing - Continuing to develop program

FLOODING

Mitigation Action	Status
Relocation of structures	Ongoing - Fall 2018, moving one home under consideration
Elevate structures	Carried forward to 2017 plan as HIGH priority.
Flood control measures	Carried forward to 2017 plan as HIGH priority.
Structural reinforcement	Completed. Spillway installed; riverbank revetment installed
Allow new construction only within NFIP criteria	Carried forward to 2017 plan HIGH priority as "Promote continued compliance with NFIP"
Map flood zones and designate hazard zones	Carried forward to 2017 plan HIGH priority as "Participate in RiskMap Program"

Wildfire

Mitigation Action	Status
Promote use of FireWise practices and concepts throughout community	Ongoing - Education through the AK Division of Forestry in the school and at 4th of July community events.
Create Community Wildfire Protection Plan (WPP)	Complete - Created in 2010
Create defensible space around city infrastructure	Ongoing - Brush is cleared annually around City structures.
Wildfire evacuation plan	Completed - Discussed and included in the 2018 Emergency Operations Plan.
Require defensible space around structures	No action taken
Create firebreak around city	Ongoing - AK Division of Forestry have cleared fire breaks protecting McGrath; MTNT received a grant to continue clearing in 2019.
Public education	Ongoing - Education through the AK Division of Forestry in the school and at 4th of July community events.

7 Plan Maintenance and Implementation

The McGrath Hazard Mitigation Plan (HMP), including appendices, will be updated every five years, after a disaster response, or as appropriate in response to community mitigation activities, changes to land use development and changes to critical infrastructure. The HMP will be formally re-promulgated by the Community and sent to the State of Alaska Division of Homeland Security and Emergency Management and the Federal Emergency Management Agency for approval once every five years.

7.1 Adoption by Local Governing Bodies and Supporting Documentation

The requirements for the adoption of this HMP by the local governing body are that the local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, Commissioner and Tribal Council)

The City of McGrath is the local jurisdiction represented in this HMP and meets the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000.

The McGrath Native Village is also represented in this HMP, meets the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000, and has requested providing formal approval of the HMP.

Scanned copies of the resolutions from both jurisdictions are included in Appendix 4.

7.2 Monitoring, Evaluating, and Updating the HMP

Table 6-1 Accomplished Goals and Actions (on page 6-1) provide a 2017 review of the status of the HMP 2010 Mitigation Action Plan.

The McGrath HMP Update 2017 was prepared as an effort of the HMP Planning Team comprised of the Local Panning Committee and the Coordinating Partners and Stakeholders. Each of the Coordinating Partners and Stakeholders will be provided access to the approved McGrath HMP Update 2017. The City Administrator of McGrath, as the HMP Planning Team Leader, (or their designee) will serve as the primary point of contact and will coordinate the efforts to monitor, evaluate, and revise the HMP for the city. The tribal administrator (or their designee) will serve as the primary point of contact for the tribe. .

The Planning Team will conduct an annual review during the anniversary week of the plan's official FEMA approval date to monitor the progress in implementing the HMP, particularly the Mitigation Action Plan. As shown in Appendix 1, the Annual Review Worksheet will provide the basis for possible changes in the HMP Mitigation Action Plan by refocusing on new or more threatening hazards, adjusting to changes to or increases in resource allocations, and engaging additional support for the HMP implementation. The Planning Committee Leader will initiate the annual review two months prior to the scheduled planning meeting date to ensure that all data is assembled for discussion with the Planning Team. The findings from these reviews will be presented at the annual Planning Team meeting. Each review, as shown on the Annual Review Worksheet, will include an evaluation of the following:

- Participation in the HMP implementation.
- Notable changes in the risk of natural or human-caused hazards.

- Impacts of land development activities and related programs on hazard mitigation.
- Progress made with the Mitigation Action Plan (identify problems and suggest improvements as necessary).
- The adequacy of local resources for implementing of the HMP.

A system of reviewing the progress on achieving the mitigation goals and implementing the Mitigation Action Plan activities and projects will also be accomplished during the annual review process. During each annual review, each authority administering a mitigation project will submit a Progress Report to the Planning Team. As shown in Appendix 1, the report will include the current status of the mitigation project, including any changes made to the project, the identification of implementation problems and appropriate strategies to overcome them, and whether or not the project has helped achieved the appropriate goals identified in the plan.

In addition to the annual review, the Planning Team will update the HMP every five years, on behalf of the City of McGrath and McGrath Native Village. To ensure that this update occurs, in the third year following adoption of the HMP, the Planning Team will undertake the following activities:

- Request grant assistance for DHS&EM to update the HMP (this can take up to one year to obtain funding and one year to update the plan).
- Thoroughly analyze and update the risk of natural and human-made hazards.
- Provide a new annual review (as noted above), plus a review of prior annual reviews.
- Provide a detailed review and revision of the mitigation strategy.
- Prepare a new Mitigation Action Plan for the City of McGrath and McGrath Native Village.
- Prepare a new draft HMP Update.
- Submit an HMP Update to the DH&EM and FEMA for approval.
- Submit the FEMA approved plan for adoption by the City of McGrath and McGrath Native Village.

7.3 Implementation Through Existing Planning Mechanisms

After the adoption of the HMP, The Planning Committee will ensure that HMP information is incorporated into new and existing planning efforts. The Planning Committee will ensure the following activities:

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in the capability assessment in Section 5.
- Work with pertinent Local Organizations to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the Mitigation Action Plan) into

relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.

- Work with the Coordinating Partners and Stakeholders to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the Mitigation Action Plan) into planning documents.

7.4 Existing Planning Mechanisms

Upon adoption of their HMP, the McGrath planning team will incorporate it into existing planning mechanisms using the following methods:

- Use the City of McGrath's regulatory tools to integrate the mitigation goals and actions. These regulatory tools are identified in Section 5.1 *Capability Assessment.*
- Encourage relevant departments and authorities to implement HMP goals and actions into relevant planning mechanisms.
- Update or amend specific planning mechanisms to integrate HMP goals and principles.

The McGrath Tribal Council may advise the City as appropriate regarding the incorporation of the mitigation strategy into new plans, plan updates, and applicable City ordinances addressing land management and construction (Table 5-1). Both the City and the Tribe are responsible for prioritizing their mitigation projects and submitting them for grant programs outlined in Chapter 5.

The City of McGrath and McGrath Native Village Council will ensure that mitigation projects will be monitored and implemented as designed/constructed and project closeouts monitored for completeness.

Integration of the principles of mitigation into the City and Tribe's daily operations and ongoing planning activities is a priority of the City and Tribe's mitigation program. These activities will support:

- Raising awareness of the importance of hazard mitigation for the whole community.
- Facilitating an understanding that hazard mitigation is not just an 'emergency services' function and building ownership of mitigation activities across the organization.
- Reduction in duplication or contradiction between local plans.

The City and Tribe are encouraged to consider integration actions into planning mechanisms including:

- Budget decision-making;
- Building and zoning ordinances and decision-making;
- Emergency planning mechanisms; and
- Economic developing planning and decision-making.

7.4.1 Future Planning

The City and Tribe are also determined to integrate mitigation planning into future efforts. Additional integration of mitigation strategies will vary from project to project, but all future planning will consider the following:

- Consider the implications of future development on hazard risks and risk reduction requirements.
- Integrate risk assessments into community decision-making processes.
- Continued community member input into the decision-making process.
- Incorporate the mitigation actions outlined in this plan into future planning.

7.5 Continued Public Involvement

The City of McGrath and the McGrath Native Village are dedicated to involving the public directly in the continual reshaping and updating of the HMP, utilizing outreach activities focused on keeping their community members involved and aware of the hazards threatening their community.

A paper copy of the HMP and any proposed changes will be available at the City and McGrath Native Village offices. An address and phone number of the Planning Team Leader, to whom people can direct their comments or concerns will also be available at both offices.

The Planning Team will also identify opportunities to raise community awareness about the HMP and the hazards that affect the area. This effort could include attendance and provision of materials at city-sponsored events, outreach programs, and public mailings. Any public comments received regarding the HMP will be collected by the Planning Team Leader, included in the annual report, and considered during future HMP updates.

8 References

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Appendix 1 - Mitigation Plan Maintenance

Appendix 1 A
Annual Review Questionnaire

Plan Section	Questions	YES	NO	Comments
Planning Process	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action?			
	Are there procedures (e.g., meeting announcements, plan updates) that can be done more efficiently?			
	Has the Local Planning Committee undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
Hazard Profiles	Has a natural and/or human-caused disaster occurred in the reporting period?			
	Are there natural and/or human-caused hazards that have not been addressed in this HMP and should be?			
	Are additional Maps or new hazards available? If so, what have they revealed?			
Vulnerability Analysis	Do any new critical facilities or infrastructure need to be added to the assets lists?			
	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?			
Mitigation Strategy	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Are the mitigation goals still applicable?			
	Should new mitigation actions be added to the communities Mitigation Action Plan?			
	Do existing mitigation actions listed in the Mitigation Action Plan need to be reprioritized?			
	Are the mitigation actions listed the Mitigation Action Plan appropriate for available resources?			
Other/ Additional				

Mitigation Action Progress Report

Progress Report Period: _____to: _____
(Date) (Date)

Project Title: _____Project ID# _____

Responsible Agency: _____

Address: _____

City: _____

Contact Person: _____Title: _____

Phone #(s): _____Email address: _____

List Supporting Agencies and
Contacts:_____
_____
_____
_____
_____

Total Project Cost: _____ Anticipated Cost Overrun/Underrun: _____

Date of Project Approval: _____ Start Date of the Project: _____

Anticipated completion Date: _____

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase):

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Mitigation Action Milestones

Milestones	Planned Date of Project Completion	Date Complete

Plan Goals Addressed:

Goal: _____

Indicators of Success:

_____

_____

☐ **Project on Schedule**

☐ **Project Completed**

☐ **Project Delayed**

☐ **Explain**_____

_____

_____

☐ **Project Canceled**

Explain_____

_____

_____

☐ **Cost Unchanged**

☐ **Cost Overrun**

Explain_____

_____

_____

☐ **Cost Underrun**

Explain_____

_____

_____

Summary of Progress on Project for this Report

A. What was accomplished duing this peproting period?:_____

_____

_____

_____

B. What obstacles, problems, or delays did you encounter, if any:

_____

_____

_____

_____

C. How was Each Problem Resolved?:_____

_____

_____

_____

_____

Maintaining Your Hazard Mitigation Plan

FEMA

Learn How to Maintain Your Hazard Mitigation Plan and Get the Best Results!

This Guide provides information on

- Who to contact for help
- Where to get information

Reviewing Your Jurisdiction's Hazard Mitigation Plan Every Year Can Pay Big Dividends.

Annual maintenance provides your community with the opportunity to update your project list and pursue grant projects that can prevent or reduce damage from natural hazards. It also provides an opportunity to see if the plan is on track. Following these steps and answering a few questions provides the reviewing authority the chance to make needed adjustments.

Before the Annual Review Begins:

Step 1 – Contact the State

The State of Alaska has access to the latest information about changes in state and federal laws, various grant programs, and data about hazards that can improve the quality of the Hazard Mitigation Plan (HMP) and grant applications for hazard mitigation projects. Below is a list of contacts for your use.

State Contacts:

The Alaska Division of Homeland Security and Emergency Management (DHS&EM)

Mark Roberts – State Hazard Mitigation Officer Phone: 907-428-7016 Email: Mark.Roberts@Alaska.gov

Ervin Petty – Hazard Mitigation Planner Phone: 907-428-7015 Email: Ervin.Petty@Alaska.gov

Taunnie Boothby – Certified Floodplain Manager of the National flood Insurance Program (NFIP) for Alaska Phone: 907-269-4583 Email: Taunnie.Boothby@Alaska.gov Web: www.commerce.state.ak.us/dca/planning/nfip/nfip.htm

Step 2 - Coordinating with Other State and Federal Agencies

Many state and federal agencies specialize in gathering hazard-related information that can be useful in preparing HMP plans and grant applications for hazard mitigation projects. Discussions with the State of Alaska may reveal the need to speak with specific state or federal agency representatives who possess the latest information about disasters and projects relevant to your jurisdiction.

Step 3 – Don't Forget to Alert Citizens about the Annual Review

Before the annual maintenance of your jurisdiction's hazard mitigation plan begins, invite the public to participate. Alerting citizens that your jurisdiction will be discussing community safety has several benefits:

- The community may gain knowledge about a potentially hazardous condition of which they were unaware;
- Interested citizens will become educated about community efforts

to prevent damage from hazards and promote community safety;

- The community may obtain volunteer resources that can lead or assist in managing a grant project or help implement a mitigation action that might not otherwise be possible; and

- Citizen participation in project implementation may count as "local match" for grant dollars if local match is required.

As the Annual Review Begins:

Provide a sign-up sheet at the meeting to record who participated in the annual review. Have everyone in attendance sign their names and indicate who they represent. Keep a summary of any changes made to the plan during the annual review. By documenting this event, the jurisdiction will easily satisfy Federal Emergency Management Agency's requirement to document the planning process (Crosswalk Requirement 4 – CFR §201.6(b)) when the 5-year plan update is due.

Discuss and Answer Questions

The following questions are provided to help guide participants through the annual review of a hazard mitigation plan.

Questions to ask the state:

Have the FEMA hazard mitigation planning requirements changed since your hazard mitigation plan was adopted? (For most jurisdictions, the answer is yes. The state can help identify new requirements).

Has the Alaska All-Hazard Risk Mitigation Plan been modified since your plan's last review?

Have any laws changed that would affect the hazard mitigation plan, goals or mitigation projects?

Are there new mitigation grant requirements that need to be discussed during the annual review?

Questions about the Risk Assessment

Have new issues or hazard-related problems been identified that aren't addressed in the hazard mitigation plan?

Has the jurisdiction experienced any new disasters since the plan was adopted or last updated? (If yes, be sure to update the "history of previous occurrences sections" of the plan during the next plan update. Mention all Presidential-declared disasters and Alaska "state-declared" disasters.)

Has the damage from new disasters been documented? Are photographs of the damage and verification of high water marks available.

Have new areas not previously identified in the hazard mitigation plan been damaged by hazardous events since the plan was approved or last updated? Are there any new impacts from recent hazardous events that should now be identified in the plan? If yes, did the hazard mitigation plan accurately anticipate the impacts from the event(s)?

Has the risk assessment of the Alaska All-Hazard Risk Mitigation Plan been reviewed to see if new information is pertinent to the local review?

Have changes (e.g., structures elevated, new dike, new road, retro-fitting for earthquakes, etc.) occurred that might reduce the effects of a hazardous event?

Have changes (e.g., new development in the floodplain, etc.) to the community increased the chance that damage might occur from a hazardous event?

Are new studies or data available that require immediate consideration?

Questions about Goals and Mitigation Measure Implementation

Are the goals of the plan being achieved through implementation of successful mitigation measures?

Have any mitigation measures been implemented since the plan was adopted or last updated? Identify and describe.

Have implemented mitigation measures achieved the desired results?

Have any of the mitigation measures been implemented through other programs?

Have the implemented mitigation measures been successful at preventing or reducing disaster-related damage? Can the estimated dollars saved be determined?

Have any programs or practices hindered or limited the effectiveness of the jurisdiction's hazard mitigation efforts?

Are the existing mitigation measures still appropriate, given current resources or changes made to the risk assessment?

Do any of the remaining proposed mitigation measures need to be re-prioritized?

Questions about Grant Administration

Do you have any mitigation success stories?

How many projects have been implemented since the plan was adopted or last updated? Were grant dollars used and was the grant closeout process successfully completed?

Which mitigation projects are underway? Are they being funded by federal grants or by other grant sources?

Obtain Hazard Mitigation Planning Resources

"Local Multi-hazard Mitigation Planning Guidance" (July 1, 2008)

http://www.fema.gov/library/viewRecord.do?id=3336

"FEMA Hazard Mitigation Planning Guides" ... a "How To" series ... for preparing hazard mitigation plans:

- Getting Started: Building Support for Mitigation Planning

- Understanding Your Risks: Identifying Hazards and Estimating Losses

- Developing a Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies

- Bringing the Plan to Life: Ensuring the Success of the Hazard Mitigation Plan Using Benefit-Cost Analysis in Mitigation Planning
- Incorporating Historic Resources into Mitigation Planning
- Integrating Human-Caused Hazards into Mitigation Planning
- Multi-Jurisdictional Approaches to Mitigation Planning
- Securing Resources for Mitigation Planning

http://www.fema.gov/plan/mitplanning/resources.shtm

Additional Resources for Each Hazard

The following agencies and Worldwide Web Links contain information useful in hazard identification, risk analysis and in developing mitigation measures to reduce damage.

Floods

FEMA= Floodsmart
http://www.floodsmart.gov/

FEMA - http://www.fema.gov/hazard/flood/index.shtm

National Weather Service
http://www.nws.noaa.gov

Alaska Department of Commerce, Community and Economic Development – Floodplain Management
http://www.commerce.state.ak.us/dca/nfip/nfip.htm

U.S. Army Corps of Engineers -
2204 3rd Street, Elmendorf AFB,
AK 99506 – phone: 907-753-2610
http://www.poa.usace.army.mil/en/cw/fld_haz/communities.htm

Wildfires

FEMA - http://www.fema.gov/hazard/wildfire/index.shtm

Fire Ready - http://fireready.com/

Firewise - http://www.firewise.org/

US Geological Survey (USGS)
http://www.usgs.gov/hazards/wildfires/

Alaska Dept. of Natural Resources – Division of Forestry
http://forestry.alaska.gov/fire/current.htm

Earthquakes

United States Geological Survey – USGS - http://www.usgs.gov/hazards/earthquakes/

FEMA – http://www.fema.gov/hazard/earthquake/index.shtm

Alaska Earthquake Information Center
http://www.aeic.alaska.edu/

Alaska Sea Grant Program
http://seagrant.uaf.edu/features/earthquake.php

Landslides and Erosion

United States Geological Survey – USGS
http://landslides.usgs.gov

FEMA - http://www.fema.gov/hazard/landslide/index.shtm

Alaska Dept. of Homeland Security and Emergency Management
http://ready.alaska.gov/plans/mitigation/landava.htm

Volcanoes

United States Geological Survey – USGS
http://volcanoes.usgs.gov

FEMA - http://www.fema.gov/hazard/volcano/index.shtm

Alaska-- http://www.avo.alaska.edu

Tsunami

FEMA - http://www.fema.gov/hazard/tsunami/index.shtm

National Oceanic Atmospheric Administration (NOAA)
http://www.prh.noaa.gov/ptwc/

Univ. of Washington - http://www.ess.washington.edu/tsunami/index.html

Alaska Sea Grant Program
http://seagrant.uaf.edu/features/earthquake.php

National Weather Service/West Coast and Alaska Tsunami Warning Center
http://wcatwc.arh.noaa.gov/events/eventmap.php

Seiches

USGS - http://earthquake.usgs.gov/learning/topics/seiche.php

Snow Avalanches

National Snow and Ice Data Center
http://nsidc.org/snow/avalanche/

Severe Weather

FEMA - http://www.fema.gov/hazard/winter/index.shtm

National Weather Service
http://www.nws.noaa.gov/

National Weather Service (Fairbanks)
http://pafg.arh.noaa.gov/

Appendix 2 – Documentation of Public Involvement

Emergency Preparedness 4/22/15 Minutes

List of participants

Scott Nelson called in Hazard Mitigation Planner will be updating the plan to include MNVC & will update it chapter ~~by~~ chapter via Mayors office → Update sign off

Mayor list goes through Organization from AL last. Thankful for his service went through list Hen by Hen

List updated.

~~We~~ Update list & email out.

McGrath Flood and Hazards Annual Planning Meeting April 22nd 2015 – Sign in Sheet

Name	Organization(s)	E-MAIL
Traci Humphrey. T. Humphrey	City of McGrath	
S Parker	McGrath School	
JUSTIN PARKER D Parker	CITY OF MCG / SCF	mayorparker@gmail.com dparker@SCF.cc
Steffen Strick Jr	MYFD	steffengstrickjr@hotmail.com
Craig Losby	City of McGrath	
CAMERON HUFF	VPSO	CAMERON.HUFF@ALASKA.GOV
Tony Jennings	NWS	Anthony.Jennings@Noaa.Gov
Tim Barnum	MLtP	tbarnum@mtnt.net
BRETT GIBBENS	TROOPERS	brett.gibbens@alaska.gov
STRICK/STEFFEN	MYFD/STATE DOT	
ROBERT MAGNUSON	—	—

You are invited to attend a public meeting

Tuesday, March 27, 2018
City of McGrath Council Meeting,
7:00 pm at the Assembly Room of
Cap 'n Snow Center

The McGrath Native Village Council will join the discussion on the McGrath Multi-Jurisdictional Hazard Mitigation Plan Update and review the mitigation strategies, priorities, and actions to reduce or eliminate long-term risks to life and property affected by natural hazards. This meeting is open to the public.

Refreshments provided.

Relevant McGrath City Administrator Reports:

City Administration Report to City Council – June 2017

Sarah McClellan, City Administrator

Riverbank Erosion Control Leve Repairs: An agreement was made with MTNT to purchase rock for 45 cubic yards of rock at $22.22 per cu yd. totally approximately$1000. Tom has moved the rock and staged it near the Rock Dock. Brant Dallas, NRCS, will show Tom what needs to be done to repair the rock barbs. Tom and I will meet with him and Lonnie Steinke to perform an annual inspection of the leve. I have a report format ready to fill out and submit to NRCS.

River Bank Survey & Further Improvements - Lonnie Steinke & Dallas Brant will be surveying the river bank the last week in June. Chris Fredericks will assist them as the boat operator and will utilize his boat.

The City had submitted a request to NRCS for further erosion control last year. The request is awaiting funding. In the meantime, NRCS is surveying and engineering a design to implement when/if funding comes through.

Hazard Mitigation Plan - Raymond O'Neill, contracting with FEMA, contacted the City to update **The McGrath Hazard Mitigation Plan**. The last update was done in 2015 but never approved by City Council. He has requested a Community Input Meeting on Monday, July 24th at 7pm. We will hold it here in the Assembly Room. The meeting will be advertised.

City Administration Progress Report to City Council – July 2017

Sarah McClellan, City Administrator

Status of Projects:

1) **Maintenance of Existing Erosion Control Leve -** An annual inspection procedure and reporting format has been set-up and completed. Craig, Tom, Sarah, Lonnie Steinke (NRCS Engineer) worked on this together. Repairs to the rock barb immediately downstream of the boat launch were made by PW/WP staff. Driftwood trees were removed on the revetment. An Operations & Maintenance Report was filed with Brett Nelson. Maintenance funds were added to the annual City operating budget in accordance with the 2014 agreement. These maintenance tasks meet the expectations of NRCS.
2) **Future Riverbank Protection** – NRCS says the next phase will be rock barbs in the river to direct the current out into the main channel of the river. This project has been approved but is awaiting federal funding.

3) **Finalizing the Easement for Leve & Revetment –** News from the State of Alaska Division of Mining, Land & Water -- The "Land Entry Permit" for the levee & revetments is expiring. The City is applying for a 1 year extension ($100). In addition, the State has not billed, but notified me that $400 in back fees are also due. The permit will not be extended until the $500 is paid. This is minor compared to the requirement to submit a final survey drawing so that the final easement and title can be signed over to the City. The City will have to hire a surveyor to complete this part

of the City's responsibility. These are all unexpected expenses. The fees can be absorbed by the current operating budget. The survey will have to be planned into the FY19 budget.

Staff Training & Education this month included Sarah attending a FEMA webinar *Notice of Funding Opportunities.*

Updating the Multi-Jurisdictional Flood & All Hazard Mitigation Plan

Raymond O'Neill, contracting with FEMA, is coordinating the update. I am working with Gina so that this is a joint effort to update the plan with the MNV. The last update effort was in 2014/2015 but never approved. The plan on the Federal Record is from 2007. Community Input Meetings are scheduled for Monday, July 24th at 2pm & 7pm in the Assembly Room. The meetings have been advertised to the public and agency representatives invited.

Breakfast Club met and discussed the Hazard Mitigation Plan for the community. Comments related to the history of the plan were very helpful.

City Administration Progress Report to City Council – August 2017

Sarah McClellan, City Administrator

Status of Projects:

Multi-Jurisdictional Flood Hazard Mitigation Plan – Two community input meetings were held on July 24th (2pm & 7pm). Twelve attended representing the McGrath Native Village Council, McGrath City Council, ML& P /MTNT, McGrath Clinic, McGrath Airport, McGrath Firefighters & Rescue Squad, Nat. Forest Service, and all City of McGrath staff attended. The Wildlife Trooper, away on other business, responded by questionnaire prior to the meeting. Contact was made with National Weather Service River Forecast Center prior and following the meeting. Raymond O'Neill and Erik Fredeen, contracted by FEMA, facilitated the meeting and will write the new plan. Nine goals and action steps to meet those goals, identified in the earlier plans were reviewed during the public meetings. Erik recorded efforts the community has made toward reaching the goals. Crane Johnson of the National Weather Service River Forecast Center will be out Aug 21 to identify sites for a second river gauge, in addition to the manual gauge measured at the AC boat ramp. River gauges are listed as an Action step in the Hazard Mitigation Plan to reduce risk of flood. These will be a 6 week trial. (These measure river level only, not flow like USGS gauges). Those will require funding, but this is a step toward that.

Erosion Control Revetment & Levee – State of Alaska Early Entry Permit, plus permits for the past 4 years, have been paid ($500). Working with Stan Brown, State of AK Surveyor, to write the scope of work for the required professional survey of the erosion control project. Performance Bond on the erosion control project and that bond expired with AMLJIA in 2013. It has been renewed through AMLJIA and we are in compliance now. If the survey were under contract we would not have to have the bond. I do not think we can get that set up fast enough.

ecology and environment, inc.
Global Environmental Specialists

PLEASE SIGN IN

Sign in Sheet for
McGrath Multi-Jurisdictional Hazard Mitigation Plan Meeting

McGrath	Date of Meeting: March 27, 2018			
First Name	Last Name	Address	Email	Phone
MNV Melody	Magnuson-Strick	Box 128 McGrath, AK	MagnusonStrick@gmail.com	574-0390
MNV Gina	McKinley	PO BOX 134 McG AK	gina.mckinley@tananachiefs.org	524 3024
City STEFFEN	STRICK	P.O. Box-128 McGrath	Steffen.Strick@ALASKA.GOV	574-0391 cell #
city Mike	Tierney	Box 142 McGrath	—	524-3922
MNV Tim	Barnum	Box 43 McGrath	tbarnum@mtnt.net	524-3009
city Barb	Dearclorff	Box 233, McGrath, AK	bidearclorff@gmail.com	574-0568
MNV Alice ~~Dale~~	Dale	Box 330 McGrath	adale@mcgrathnvc.com	574-0318
Sarah	mcclellan	PO Box 30 Mcgrath	administrator@cityofmcgrath.org	524.3825

Appendix 3 – Coordinating Questionnaire

CITY OF MCGRATH AND NATIVE TRIBE OF MCGRATH HAZARD MITIGATION PLANNING COORDINATION

For questions about this you can contact Raymond O'Neill (907) 351-2529 or the City or Native Tribe of McGrath

The Village is updating its Hazard Mitigation Plan and is asking you, as a community stakeholder, to participate in our coordination efforts. We have prepared a short questionnaire to help you participate and we hope you will review and complete as much as possible before returning your responses via email.

Have you contributed to Hazard Mitigation Planning with McGrath in the past?

- ❑ ***Yes***
- ❑ ***No***

Here is a FEMA frequently asked questions (FAQ) website that will be helpful:
https://www.fema.gov/hazard-mitigation-planning-frequently-asked-questions

Below is a list of 8 hazard mitigation actions proposed by the community in its most recent planning efforts. Please review these and rank these by numbering them 1 to 8 in order of potential for providing the best mitigation of risk.

Please provide any observations you have regarding these proposed mitigation actions and please provide any additional mitigation you think would be appropriate for this community.

Rank	Proposed Mitigation
	❑ **Acquire (buy out), relocate, elevate, or otherwise flood-proof public and private buildings.**
	❑ **Coordinate with the State Floodplain Manager to explain NFIP participation benefits and regulations and promote continued compliance with the NFIP**
	❑ **Install, monitor, and maintain streamflow gages upriver and downriver**
	❑ **Extend and reinforce the levy along the riverbank.**
	❑ **Participate in the RiskMap program**
	❑ **Develop a Small Community Emergency Response Plan (SCERP) with assistance from Alaska State DHS&EM.**
	❑ **Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.**
	❑ **Integrate HMP risk assessments, goals, and actions into capital improvement, emergency management, and community projects.**

Below is a list of hazards profiled by the community using a Risk Priority Index in its most recent planning effort. Please review these and provide any observations you are willing to share.

Risk Priority Index					
Hazard	**Probability**	**Impact**	**Warning Time**	**Duration**	**Priority Risk Index**
Earthquake	1 Remote	1 Negligible	4 < 6 Hours	1 < 6 Hours	1.45
Erosion	3 Likely	2 Limited	1 24+ Hours	4 > One Week	2.5
Flooding	4 High	3 Critical	2 12-24 Hours	3 < One Week	3.3
Subsidence	2 Plausible	2 Limited	1 24+ Hours	1 < 6 Hours	1.75
Severe Winter Storm	4 High	1 Negligible	1 24+ Hours	3 < One Week	2.55
Wildfires	3 Likely	3 Critical	2 12-24 Hours	4 >One Week	2.95
Climate Change	1 Remote	4 Catastrophic	1 24+ Hours	4 >One Week	2.20

The full 2007 ***City of McGrath Alaska Flood and All-Hazard Mitigation Plan*** and other community planning for McGrath can be accessed here: https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/CommunityPlansLibrary.aspx

Please provide any additional feedback you have regarding this questionnaire and the Hazard Mitigation Planning for the Community of McGrath.

_____
_____
_____
_____
_____
_____
_____

The Tribe and City of McGrath together are facilitating a public involvement meeting on July 24th- July 25th to gather public input to the Hazard Mitigation Planning Process.

For questions about this you can contact Raymond O'Neill (907) 351-2529 or the City or Native Tribe of McGrath

Please tell us who you are

Agency _____
Contact Name _____

Phone Number _____

Email Address _____

Mailing Address _____

Thank you!

MCGRATH NATIVE VILLAGE COUNCIL AND CITY OF MCGRATH HAZARD MITIGATION PLANNING COORDINATION

For questions about this please contact the City of McGrath or McGrath Native Village Council

McGrath is updating its Hazard Mitigation Plan and is asking you, as a community stakeholder, to participate in our coordination efforts. We have prepared a short questionnaire to help you participate and we hope you will review and complete as much as possible before returning your responses via email.

Have you contributed to Hazard Mitigation Planning with McGrath in the past?

- ❑ *Yes*
- ❑ *No*

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Please provide any observations you have regarding these proposed mitigation actions and please provide any additional mitigation you think would be appropriate for this community.

Rank	Proposed Mitigation
6	❑ **Acquire (buy out), relocate, elevate, or otherwise flood-proof public and private buildings.**
7	❑ **Coordinate with the State Floodplain Manager to explain NFIP participation benefits and regulations and promote continued compliance with the NFIP**
2	❑ **Install, monitor, and maintain streamflow gages upriver and downriver**
1	❑ **Extend and reinforce the levy along the riverbank.** EXTREMELY IMPORTANT FOR OVERALL EROSION/FLOOD PROOFING
5	❑ **Participate in the RiskMap program**
3	❑ **Develop a Small Community Emergency Response Plan (SCERP) with assistance from Alaska State DHS&EM.**
4	❑ **Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning.**
8	❑ **Integrate HMP risk assessments, goals, and actions into capital improvement, emergency management, and community projects.**

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https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/CommunityPlansLibrary.aspx

Please provide any additional feedback you have regarding this questionnaire and the Hazard Mitigation Planning for the Community of McGrath.

HAVING THE ROCK EROSION CONTROL IN PLACE ALONG WITH A LOCAL EMERGENCY RESPONSE PLAN ARE BOTH EXTREMELY IMPORTANT

The Tribe and City of McGrath together are facilitating a public involvement meeting on July 24th- July 25th to gather public input to the Hazard Mitigation Planning Process.
For questions about this please contact the City of McGrath or McGrath Native Village Council. You can also contact Raymond O'Neill, Planning Assistant, (907) 351-2529.

Please tell us who you are

Agency: ALASKA WILDLIFE TROOPERS
Contact Name: BRETT GIBBENS (TROOPER)
Phone Number: 907 524 3222
Email Address: brett.gibbens@alaska.gov
Mailing Address: P.O. BOX 210 McGrath, AK 99627

Thank you!

Appendix 4 – Plan Adoption Resolution

U.S. Department of Homeland Security
FEMA Region 10
130 – 228th Street, SW
Bothell, Washington 98021

FEMA

September 5, 2018

Mr. Brent Nichols
State Hazard Mitigation Officer
Alaska Division of Homeland Security and Emergency Management
P.O. Box 5750
Fort Richardson, Alaska 99505-5750

Dear Mr. Nichols:

As requested, on September 5, 2018, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA), Region 10, completed a pre-adoption review of the ***McGrath, Alaska Multi-Jurisdictional Hazard Mitigation Plan***. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by the City of McGrath. The plan successfully contains the required criteria, excluding the adoption, for hazard mitigation plans, as outlined in Code of Federal Regulation Title 44 Part 201.

Once FEMA approves the plan, the City of McGrath is eligible for mitigation project grants.

Please contact our Regional Mitigation Champion, Kate Skaggs, currently providing interim support to the Mitigation Planning Program at (541) 600-4047 with any questions.

Sincerely,

X _____

Tamra Biasco
Chief, Risk Analysis Branch
Mitigation Division

KS:vl

U.S. Department of Homeland Security
FEMA Region 10
130 – 228th Street, SW
Bothell, Washington 98021

FEMA

September 5, 2018

The Honorable Alice Dale
President
McGrath Native Village Council
P.O. Box 134
McGrath, AK 99627

Dear President Dale:

The Federal Emergency Management Agency (FEMA) Region 10 completed a pre-adoption review of the draft *McGrath, Alaska Multi-Jurisdictional Hazard Mitigation Plan*. The attached Mitigation Plan Review Tool documents the Region's review and compliance with all required elements of 44 CFR Part 201.7. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by the tribe.

Formal adoption documentation must be submitted to FEMA Region 10 within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review.

Please contact our Regional Mitigation Champion, Kate Skaggs, currently providing interim support to the Mitigation Planning Program at (541) 600-4047 with any questions.

Sincerely,

Tamra Biasco
Chief, Risk Analysis Branch

cc: Brent Nichols, Alaska Division of Homeland Security and Emergency Management

Enclosures

KS:vl

CITY OF McGRATH, ALASKA
RESOLUTION 19-01

RESOLUTION TO APPROVE AND ADOPT THE 2018 McGRATH MULTI-JURISDICTIONAL HAZARD MITGATION PLAN.

WHEREAS, the McGrath City Council is the governing body for the City of McGrath, Alaska;

WHEREAS, McGrath's Multi-jurisdictional Hazard Mitigation Plan (HMP) identifies actions to reduce or eliminate long-term risks to people and property from natural disasters such as flooding, erosion, wildfire, and severe weather.

WHEREAS, McGrath updates the Multi-jurisdictional Hazard Mitigation Plan (HMP) every 5 years to identify and coordinate risk mitigation with State, Federal and local partners;

WHEREAS, Federal regulations require local communities to have an updated, Federal Emergency Management Agency (FEMA) approved, hazard mitigation plan to be eligible for FEMA grant programs;

WHEREAS, McGrath's Multi-jurisdictional HMP was updated in 2017 and 2018 with technical support from the State of Alaska and a local Planning Team representing the City of McGrath, the McGrath Native Village Council, local partners and public participants;

WHEREAS, U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA), Region 10, has completed the pre-adoption review of the updates to McGrath's Multi-jurisdictional Hazard Mitigation Plan and will approve the plan when it is adopted by the City of McGrath and the McGrath Native Village Council through independent resolutions;

THEREFORE BE IT RESOLVED that the City of McGrath City Council approves and adopts the updated 2018 McGrath Multi-jurisdictional Hazard Mitigation Plan.

PASSED and APPROVED BY THE McGRATH CITY COUNCIL
ON THIS 8th Day of Oct, 2018 BY A VOTE OF 5 AYES AND X NAYS

CITY OF McGRATH

Mayor

ATTEST: _____
Kim Wortman, Clerk

U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, Washington 98021

FEMA

October 16, 2018

The Honorable Ralph Morgan
Mayor, City of McGrath
P.O. Box 30
McGrath, Alaska 99627

Dear Mayor Morgan:

On October 15, 2018, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10, approved the *McGrath, Alaska Multi-Jurisdictional Hazard Mitigation Plan 2018* as a multi-jurisdictional local plan as outlined in Code of Federal Regulations Title 44 Part 201. This approval provides the below jurisdictions eligibility to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's, Hazard Mitigation Assistance (HMA) grants projects through October 14, 2023, through your state:

City of McGrath

FEMA individually evaluates all application requests for funding according to the specific eligibility requirements of the applicable program. Though a specific mitigation activity or project identified in the plan may meet the eligibility requirements, it may not automatically receive approval for FEMA funding under any of the aforementioned programs.

McGrath Native Village will be included and also eligible for HMA grants when the Council adopts the plan and provides FEMA with the resolution.

Approved mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). For additional information regarding the CRS, please visit: www.fema.gov/national-flood-insurance-program-community-rating-system or contact your local floodplain manager.

Over the next five years, we encourage your communities to follow the plan's schedule for monitoring and updating, and to develop further mitigation actions. To continue eligibility, jurisdictions must review, revise as appropriate, and resubmit the plan within five years of the original approval date.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact Mike Johnson, State Mitigation Planner with Alaska Division of Homeland Security and Emergency Management, at (907) 428-7055, who coordinates and administers these efforts for local entities.

FEMA REGION 10 LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to participating jurisdictions.

1. The Multi-Jurisdiction Summary Sheet is used to document how each jurisdiction met the requirements in the Plan.
2. The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
3. The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.

The FEMA Mitigation Planner must reference the *Local Mitigation Plan Review Guide* when completing this *Local Mitigation Plan Review Tool*.

<table>
<tr><td>Jurisdiction:
McGrath, AK (Region 10)</td><td colspan="2">Title of Plan:
McGrath Alaska Multi-Jurisdictional Hazard Mitigation Plan 2017</td><td>Date of Plan:

April 2018</td></tr>
<tr><td colspan="2">Local Point of Contact:
Sarah McClellan</td><td colspan="2" rowspan="3">Address:
City of McGrath
PO BOX 30
McGrath, AK
99627</td></tr>
<tr><td colspan="2">Title:
City Administrator</td></tr>
<tr><td colspan="2">Agency:
City of McGrath</td></tr>
<tr><td colspan="2">Phone Number:
(907) 524-3825</td><td colspan="2">E-Mail:
administrator@cityofmcgrath.org</td></tr>
</table>

State Reviewer:	**Title:**	**Date:**
Mike Johnson	Planner	31 MAR 18

FEMA Reviewer:	**Title:**	**Date:**
Chelsea Kahn	CERC Planner	6/25/2018
Kate Skaggs	Mitigation Champion	7/2/2018
Amanda Siok	Senior Mitigation Planner	07/05/2018
Kate Skaggs Kate.Skaggs@mbakerintl.com	Mitigation Champion	8/29/2018
Date Received in FEMA Region 10	5/31/2018	
Plan Not Approved		
Plan Approvable Pending Adoption	9/5/2018	
Plan Approved	10/15/2018	

SECTION 1: MULTI-JURISDICTION SUMMARY SHEET (used only for multi-jurisdictional plans)

INSTRUCTIONS: The Multi-Jurisdiction Summary Spreadsheet is completed by listing each participating jurisdiction and which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it is used to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)											
#	Jurisdiction Name	Jurisdiction Type (city/borough/ district, etc.)	POC	Required Revisions / Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	McGrath Native Village	Tribe/IRA	Gina McKindy		Y	Y	Y	N/A	APA	N/A
2	City of McGrath	City	Sarah McClellan		Y	Y	Y	Y	Y	N/A
3										
4										
5										
6										
7										
8										
9										
10										

SECTION 2: REGULATION CHECKLIST

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Section 1 (PDF 7); Section 2.1 – 2.2.3. (PDF 10 – 14); Appendix 3 (PDF 83 – 87)	x	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Section 2.2 (PDF 10 – 13); Section 7.2 (PDF 66)	x	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section 2.2 (PDF 13 – 15); Appendix 2 (PDF 79 – 83); Appendix 3 (PDF 84 – 87)	x	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Section 2.3 (PDF 15-16)	x	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section 2.4 (PDF 16 - 17); Section 7.5 (PDF 69)	x	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section 7 (PDF 66 - 69); Appendix 1 (PDF 72 – 78) Sec. 7.2, 2nd paragraph.	X	

ELEMENT A: REQUIRED REVISIONS

Recommended Revision Element A1/A2/A3: Consider providing more information on how the planning team and stakeholders were engaged and contributed to the planning process. Table 2.1.2 shows 'Coordinating Partners and Stakeholders' but not all of these names appear on the single sign-in sheet provided on PDF page 83. Documented participation by the team and stakeholders is from 2015.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section 4.3 (PDF 43 – 26); Section 4.5 (PDF 51 – 52) Flood 4.3.1, Erosion 4.3.2, Fire 4.3.3, Severe Weather 4.3.4, Ground Failure 4.3.5, Earthquake 4.3.6, Climate Change 4.3.7	x	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Section 4.3 (PDF 43 – 26), addressed in "History" subhead Flood 4.3.1, Erosion 4.3.2, Fire 4.3.3, Severe Weather 4.3.4, Ground Failure 4.3.5, Earthquake 4.3.6, Climate Change 4.3.7	x	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section 4.3 (PDF 43 – 26), addressed in "Potential Magnitude and Severity" subhead; Section 4.4 – 4.5 (PDF 45 – 52)	x	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Section 4.6 (PDF 52 – 53)	X	
ELEMENT B: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section 5 (PDF 54 – 57)	x	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Section 1.4 (PDF 9); Section 4.6 (PDF 52 – 53) Reference of 015 FEMA Flood Insurance Rate Map (PDF 31)	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section 6.1 (PDF 58)	x	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	See Section 6.2 -6.3 (Table 6.3) (PDF 58 – 65).	x	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section 6.3 (PDF 60 - 65); Appendix 5 (PDF 90 – 92)	x	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Section 5 (PDF 54 – 57); Section 6, table 6-6 (PDF 63 – 65); Section 7 (PDF 66 – 69)	x	

ELEMENT C: REQUIRED REVISIONS

Recommended Revision Element C3: The plan can more clearly define its mitigation goals by updating Table 6-2 (PDF 58). The fire hazard is listed twice (#'s 1 and 6) and reducing flood hazards is not listed however, flood is identified as being the number one hazard of concern in risk assessment section. Consider replacing "fire" with "flood" in either goal 1 or goal 6.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Section 4.1 (PDF 24 – 25); Section 4.7 (PDF 53)	X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Table 6-1 (PDF 58); Table 6-6 (PDF 63 – 65); PDF 66	X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Table 6-2 Mitigation Goals (PDF 58)	X	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	The plan will be adopted upon APA status	X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			X
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 3: PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Plan Strengths

- E/E - The City of McGrath Administrator provided institutional knowledge of the previous planning process and was able to assist in providing information that was lacking in the initial draft HMP which was submitted by Meridian Management.
- E/E - Members of the City and McGrath Native Village Councils met jointly in March to review the draft HMP. Although the McGrath Native Village had not been involved early in the process, the Council members that were present provided their assistance.
- E/E - Besides the meetings, information was gained from surveys and email.
- DHS – Conducted two meetings with community on the same day. This allowed residents on different schedules to attend.
- DHS – City already has plans for river bank stabilization. City admin has expressed other projects that they want to pursue once play is approved.
- DHS – Good cross section of attendees at meetings (city, village, CORP, DPS, ANTCH, schools, VSWP, COE, DNR, DOT) In the future more businesses need to brought in.
- DHS – City/Village staff were quick to comment on the great job E&E (Vivian Melde) did in bringing in stakeholders to get the best information to complete the plan. This is in contrast to the last contractor who failed to use community input for the plan.
- DHS – Plan significantly changed priorities from past plans.
- Good plan format, including appendices, that is easily readable.
- Good summary of socio-economic data on community.

Opportunities for Improvement

- E/E - The planning process during the initial development of the McGrath HMP lacked involvement of the McGrath Native Village Council, which was an oversight by the contractor, Meridian Management. The planner lacked experience with developing a hazard mitigation plan and the nuances of ensuring the City and McGrath Native Village Council was at the table from the beginning of the plan development.
- E/E - There could have been more guidance, had an experienced contractor been on board. Additionally, the previous plans, including the original HMP and the 2015 HMP, which was not approved by FEMA, provided adequate formatting for the plan document; however, the draft that had been submitted to the State was poorly formatted. This made it difficult to follow the flow from “cut-and-paste” sections within the plan that were poorly placed with no thought to the appropriateness of the section in which text was placed.
- E/E - For future planning activities, the City and McGrath Native Village might consider planning around a community event, in which to present flyers or surveys.

- Consider including more specific information and expanding the documenting of the steps for plan creation more clearly, using dates/including meeting minutes.
- Consider a more robust method for continuing public engagement on the plan, such as leveraging existing community events.
- Supportive Hazard Questionnaire was useful; however, consider encouraging better participation and advertising the questionnaire more broadly.

Element B: Hazard Identification and Risk Assessment

Plan Strengths

- DHS – Good evaluation of riverine erosion. Spells it out in the most common of terms.
- DHS – Good use of photos to illustrate the flood damage/impacts.
- Great inclusion of Inventory of Structures in Floodplain and information about critical resources and critical infrastructure in the plan update.
- Risk assessment summaries on page 51 are useful and good capture of information.

Opportunities for Improvement

- E/E - Follow-up work should be addressed for the NFIP requirements. Although there was an FIS, additional information and planning should be done, particularly with the Repetitive Loss properties.
- E/E - Follow-up work on obtaining the replacement values for structures identified as Critical Facilities for both the City and McGrath Native Village.
- DHS – Photos are used they should tell a story or show detail hard to formulate from words. Section 3.1.5 photo of river is not captioned or useful in any way.
- Consider more explicitly summarizing the extent, severity, and impact of earthquakes within the jurisdiction to match formatting and layout of other hazard profiles.
- Consider integrating the impacts of climate change into each hazard section, since the impacts listed are exacerbating existing hazards.
- Consider including or locating more information about repetitive loss structures. While this inventory was deemed a low risk, Action Item 1.5 lists to "Acquire, relocate, elevate or otherwise flood-proof public and private buildings." A strategic starting point would be any structures that have a history of flooding, even if flood insurance wasn't claimed.

Element C: Mitigation Strategy

Plan Strengths

- Very clear method for prioritization using STAPLEE evaluation criteria, cost-benefit analysis and categorizing of mitigation actions.
- Good outlines actions, moving away from the preparedness focused and more to mitigation focus specifically on reducing the impacts of hazards identified.

Opportunities for Improvement

- Suggest using more specific objectives in addition to goals to help narrow the focus of the goals to ensure they are realistic and obtainable.
- Update Table 6-2 Mitigation Goals to match the goals outlined in Table 6-3 Mitigation Actions ("Reduce the risk of wildland fire damage." is included twice in Table 6-2 but the description included in Table 6-3 states "Losses due to Flooding will be reduced or eliminated."). Additionally, ensure that Goal and Action numbers match throughout the document and associated tables (for example "Integrate HMP risk assessments, goals, and actions into emergency response, land use, and comprehensive planning." Is noted as 9.1 and then later as 8.1).
- In addition to including the responsible agency for each mitigation action, consider identifying the specific position or even the office within an agency/department to ensure greater success and address any staff turnover.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Plan Strengths

- DHS – I don't feel implementation will be an issue. The community is undertaking projects and looks to apply for new ones once the plan is approved. Community involvement (at official level) is high. The city/village is engaged with the contractor and state rep often.

Opportunities for Improvement

- E/E - Conduct annual reviews and committee involvement for the next five years.
- E/E - Identify a lead person to champion the Plan for the community, who can represent both the McGrath Native Village and the City.
- Consider an illustration to clearly depict development changes in relation to location of hazard risks.
- Consider more explicitly outlining how the changes in development have left the County more or less vulnerable in the time between plans. Even though there is no formal zoning or land use controls, consider implementing a way to informally track where development is occurring within the planning area. This information will support the next plan update and could inform mitigation actions that could most effectively reduce risk for the community.

B. Resources for Implementing Your Approved Plan

The **Region 10 Integrating Natural Hazard Mitigation into Comprehensive Planning** is a resource specific to Region 10 states and provides examples of how communities are integrating natural hazard mitigation strategies into comprehensive planning. You can find it in the FEMA Library at http://www.fema.gov/media-library/assets/documents/89725.

The **Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials** resource provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns. It includes recommended steps and tools to assist with local integration efforts, along with ideas for overcoming possible impediments, and presents a series of case studies to demonstrate successful integration in practice. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=7130.

The **Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards** resource presents ideas for how to mitigate the impacts of different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review process. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=6938.

The **Local Mitigation Planning Handbook** provides guidance to local governments on developing or updating hazard mitigation plans to meet and go above the requirements. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=7209.

The **Integration Hazard Mitigation and Climate Adaptation Planning: Case Studies and Lessons Learned** resource is a 2014 ICLEI publication for San Diego with a clear methodology that could assist in next steps for integration impacts of climate change throughout mitigation actions. http://icleiusa.org/wp-content/uploads/2015/08/Integrating-Hazard-Mitigation-and-Climate-Adaptation-Planning.pdf

The **Local Mitigation Plan Review Guide and Tool** resource is available through FEMA's Library and should be referred to for the next plan update. http://www.fema.gov/library/viewRecord.do?id=4859

The **Tribal Multi-Hazard Mitigation Planning Guidance:** This resource is specific to tribal governments developing or updating tribal mitigation plans. It covers all aspects of tribal planning requirements and the steps to developing tribal mitigation plans. You can find the document in the FEMA Library at http://www.fema.gov/media-library/assets/documents/18355

Volcanic Eruption Mitigation Measures: For information on Mitigation Actions for Volcanic Eruptions that would satisfy the C4 requirement, please visit: http://earthzine.org/2011/03/21/volcanic-crisis-management-and-mitigation-strategies-a-multi-risk-framework-case-study/ and http://www.gvess.org/publ.html.

The FEMA Region 10 **Risk Mapping, Analysis, and Planning program (Risk MAP)** releases a monthly newsletter that includes information about upcoming events and training opportunities, as well as hazard and risk related news from around the Region. Past newsletters can be viewed at http://www.starr-team.com/starr/RegionalWorkspaces/RegionX/Pages/default.aspx. If you would like to receive future newsletters, email rxnewsletter@starr-team.com and ask to be included.

The mitigation strategy may include eligible projects to be funded through FEMA's hazard mitigation grant programs (Pre-Disaster Mitigation, Hazard Mitigation Grant Program, and Flood Mitigation Assistance). Contact your State Hazard Mitigation Officer, Brent Nichols at Brent.Nichols@alaska.gov, for more information.

Sincerely,

Mark Carey, Director
Mitigation Division

Enclosure

cc: Brent Nichols, Alaska Division of Homeland Security and Emergency Management

KS:rg

Appendix 5 – Cost Benefit Analysis Factsheet

Benefit-Cost Analysis Fact Sheet

Hazard mitigation projects are specifically aimed at reducing or eliminating future damages. Although hazard mitigation projects may sometimes be implemented in conjunction with the repair of damages from a declared disaster, the focus of hazard mitigation projects is on strengthening, elevating, relocating, or otherwise improving buildings, infrastructure, or other facilities to enhance their ability to withstand the damaging impacts of future disasters. In some cases, hazard mitigation projects may also include training or public-education programs if such programs can be demonstrated to reduce future expected damages.

A Benefit-Cost Analysis (BCA) provides an estimate of the "benefits" and "costs" of a proposed hazard mitigation project. The benefits considered are avoided future damages and losses that are expected to accrue as a result of the mitigation project. In other words, benefits are the reduction in expected future damages and losses (i.e., the difference in expected future damages before and after the mitigation project). The costs considered are those necessary to implement the specific mitigation project under evaluation. Costs are generally well determined for specific projects for which engineering design studies have been completed. Benefits, however, must be estimated probabilistically because they depend on the improved performance of the building or facility in future hazard events, the timing and severity of which must be estimated probabilistically.

All Benefit-Costs must be:

- Credible and well documented
- Prepared in accordance with accepted BCA practices
- Cost-effective, Benefit Cost Ratio (BCR $\geq$ 1.0)

General Data Requirements:

- All data entries (other than Federal Emergency Management Agency [FEMA] standard or default values) MUST be documented in the application.
- Data MUST be from a credible source.
- Provide complete copies of reports and engineering analyses.
- Detailed cost estimate.
- Identify the hazard (flood, wind, seismic, etc.).
- Discuss how the proposed measure will mitigate against future damages.
- Document the Project Useful Life.
- Document the proposed Level of Protection.
- The Very Limited Data (VLD) BCA module cannot be used to support cost-effectiveness (screening purposes only).
- Alternative BCA software MUST be approved in writing by FEMA HQ and the Region prior to submittal of the application.

Damage and Benefit Data:

- Well documented for each damage event.
- Include estimated frequency and method of determination per damage event.
- Data used in place of FEMA standard or default values MUST be documented and justified.
- The Level of Protection MUST be documented and readily apparent.
- When using the Limited Data (LD) BCA module, users cannot extrapolate data for higher frequency events for unknown lower frequency events.

Building Data:

- Should include FEMA Elevation Certificates for elevation projects or projects using First Floor Elevations (FFEs).
- Include data for building type (tax records or photos).
- Contents claims that exceed 30 percent of building replacement value (BRV) MUST be fully documented.
- Method for determining BRVs MUST be documented. BRVs based on tax records MUST include the multiplier from the County Tax Assessor.
- Identify the amount of damage that will result in demolition of the structure (FEMA standard is 50 percent of pre-damage structure value).
- Include the site location (i.e., miles inland) for the Hurricane module.

Use Correct Occupancy Data:

- *Design occupancy* for Hurricane shelter portion of Tornado module.
- *Average occupancy per hour* for the Tornado shelter portion of the Tornado module.
- *Average occupancy* for Seismic modules.

Questions to Be Answered:

- Has the level of risk been identified?
- Are all hazards identified?
- Is the BCA fully documented and accompanied by technical support data?
- Will residual risk occur after the mitigation project is implemented?

Common Shortcomings:

- Incomplete documentation.
- Inconsistencies among data in the application, BCA module runs, and the technical support data.
- Lack of technical support data.
- Lack of a detailed cost estimate.
- Use of discount rate other than FEMA-required amount of 7 percent.
- Overriding FEMA default values without providing documentation and justification.
- Lack of information on building type, size, number of stories, and value.
- Lack of documentation and credibility for FFEs.
- Use of incorrect Project Useful Life (not every mitigation measure = 100 years).

Appendix 6 – HIS Proposed Sanitation Capital Improvement

DISCLAIMER: Data displayed below is for informational purposes only.

EXISTING DEFICIENCIES:

Water:

Sewer: Sewage treatment lagoon aeration is not effective and aeration components have deteriorated to the point that failure has occurred and is not correctable by routine maintenance. Nine (9) STEP(Sewage Tank Effluent Pumping) Systems often backup and overflow onto the surrounding ground or into the home due to failed pumps and no isolation valves. In addition, all tanks and pumps have reached their useful life and are failing - Total of 38 Units. This system requires a vacuum truck to operate; the current truck is a 1959 truck and in too bad of shape to repair.

Solid Waste: None

O & M: Homeowner training required.

PROPOSED FACILITIES:

Water: None

Sewer: The lagoon requires new air diffusers and blowers. The valve vault at the lagoon needs better access and insulation. The blower house needs structural and electrical improvements. (HI C) All 38 STEP systems need to be replaced. Install isolation valves on each unit. (HI C) Procure Vacuum truck for the village (HI C)

Solid Waste: None

O & M: None

COST ESTIMATE

Scope Item	Funding Source	Quantity	Units	Health Impact Tier
Sewer, Other - Other sewer	IHS Regular	1	Ls.	C
Sewer, Other - Other sewer	IHS Regular	1	Ls.	C

Health Impact Tier:
A - First Service
B - Regulatory Compliance
C - Essential Upgrades
D - Beneficial Upgrades
E - Desired Upgrades

Total Costs: $1,582,075.00

DISCLAIMER: Data displayed below is for informational purposes only.

EXISTING DEFICIENCIES:

Water: Existing pipes have a history of multiple failures. This causes the city to spend enormous amounts of money locating and repairing leaks. It also has cost as much as $100,000/yr in leaking treating water. The original pipes are believed to have been improperly welded which causes these frequent failures. The system is designed for 60-80 GPM and frequently leaks 15-30 GPM which is greater than 15% of the design flow for the entire system. In an average year they have 4 to 10 water main breaks causing leakage of treated water. (DL 3). There is a PER document that supports the upgrades to the distribution system.

Sewer:

Solid Waste: None

O & M:

PROPOSED FACILITIES:

Water: Add romac clamps to each welded 3" and 6" joint in the system. This method has been used on several joints and has been shown to be reliable and effective (they don't have to replace clamps after they are in place). In addition they need isolation valves to assist in finding leaks that do occur and to maintain sections of the system without taking the entire system off line. This repair method makes the most economical sense and is a long term solution. In addition they have corrosion problem at the corporation stops and this can be solved by replacing the bushing. See the PER document supporting this project. The PER was approved 10/13/2016.

Sewer:

Solid Waste: None

O & M: None

COST ESTIMATE

Scope Item	Funding Source	Quantity	Units	Health Impact Tier
Water, Other - Other water	IHS Regular	1	Ls.	D
Water, Other - Other water	IHS Regular	1	Ls.	D

Health Impact Tier:
A - First Service
B - Regulatory Compliance
C - Essential Upgrades
D - Beneficial Upgrades
E - Desired Upgrades

Total Costs: $2,714,091.00

DISCLAIMER: Data displayed below is for informational purposes only.

EXISTING DEFICIENCIES:

Water: None

Sewer: None

Solid Waste: Class III Permit SW3A030-19 expires 10/1/2019. City of McGrath is the landowner & operator of the site. The site is a trench & fill operation with a seepage pits.There is no heavy equipment located at the site to manage the daily activities of waste separation and cover. Per 2014: Waste is burned using a burn unit constructed in McGrath. Small manageable working face on north side, and the south area needs more frequent cover to control litter and pests. Several seepage pits are full & need closed. Salvage area needs better organization. Site has a covered area for HHW and separation. Has collection program & fees are charged.

O & M: None

PROPOSED FACILITIES:

Water: None

Sewer: None

Solid Waste: Site needs fencing, daily cover material, close seepage pits & heavy equipment (D6 dozer) to manage the Solid waste site.

O & M: None

COST ESTIMATE

Scope Item	Funding Source	Quantity	Units	Health Impact Tier
Solid Waste C (Development) - Other solid waste	IHS Regular	1	Ls.	D
Solid Waste A (Plan) - Management Plan, Solid Waste	Other	1	Ls.	D

Health Impact Tier:
A - First Service
B - Regulatory Compliance
C - Essential Upgrades
D - Beneficial Upgrades
E - Desired Upgrades

Total Costs: $617,217.00

Appendix 7 - Mitigation Planning Requirements and Authorities

A-7.1 Mitigation Plan Requirements

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Title 42 of the United States Code 5121 et seq. Section 322, provides the legal basis for FEMA mitigation plan requirements as a precondition for receiving FEMA mitigation project grants. The Disaster Mitigation Act of 2000 (DMA 2000), Title 44 of the Code of Federal Regulations (CFR), Part 201, amends the Stafford act by establishing mitigation planning requirements that emphasize the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. Other state, regional and national programs may also reference the community's HMP as a funding condition.

The following topics provide requirement descriptions, including the CFR section (§) of the DMA 2000 authorizing the requirement. The following topics also cross-reference to those sections within the HMP that document how each requirement has been satisfied.

A-7.2 Planning Process Requirements

For the HMP to be approved by FEMA it must document the planning process including how it was prepared and who was involved in the process (DMA 2000 §201.6(c)(1)). The plan is required to document how the public was involved in the planning process during the drafting stage (DMA 2000 §201.6(b)(1)), and how neighboring communities, local and regional agencies with development authority, and other key stakeholders were provided the opportunity to be involved in the planning process (DMA 2000 §201.6(b)(2)). Section 2.1.2 provides a list of those agencies and other effected stakeholders that were contacted during the development of this HMP Update. Section 2.2 describes the public involvement process.

The HMP is required to describe how other existing plans, studies, reports and technical information were reviewed and incorporated into the plan document (DMA 2000 §201.6(b)(3)). Section 2.3 describes what other planning and studies were referenced and used by the Planning Team during the update of this HMP. Maintenance of the HMP must also be documented, including a description of how it will be monitored, evaluated, and updated within a 5-year cycle with continued public input (DMA 2000 §201.6(c)(4)(iii)), and how the public will continue to be participants in the process (DMA 2000 §201.6(c)(4)(i)). Section 2.4 provides details on how this HMP will be maintained.

A-7.3 Hazard Identification and Risk Assessment Requirements

The HMP is required to provide a description of the type, location, and extent of all natural hazards that can affect the community (DMA 2000 §201.6(c)(2)(i)), and include information about previous occurrences and the probability of future hazard events (DMA 2000 §201.6(c)(2)(i)). Section **Error! Reference source not found.**, beginning on page **Error! Bookmark not defined.**, lists natural hazards and identifies those that pose significant risk to the community. Section **Error! Reference source not found.**, beginning on page **Error! Bookmark not defined.** provides necessary detail about the hazards representing risk to the community.

A description of the impact of each of the identified hazards, as well as an overall summary of the community's vulnerability to the hazards must also be described in the HMP (DMA 2000 §201.6(c)(2)(ii)). Section **Error! Reference source not found.** beginning on page **Error! Bookmark not defined.** describes the specific impacts and the community's vulnerability to

identified hazards. Where applicable the HMP addresses NFIP insured structures within the community that have been subject to repetitive damage (DMA 2000 §201.6(c)(2)(ii)); however, see Section 4.6 for McGrath's repetitive loss structures.

A-7.4 Mitigation Strategy Requirements

The HMP is required to document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs (DMA 2000 §201.6(c)(3)). Section 5.3 describes the community's capacity for maintaining and expanding its policies and programs to implement their hazard mitigation strategy. It must also address the community's participation in and compliance with the National Flood Insurance Program (NFIP) (DMA 2000 §201.6(c)(3)(ii)).

The HMP must include goals to reduce and/or avoid long term vulnerabilities to identified hazards(DMA 2000 §201.6(c)(3)(i)), with analysis of a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure (DMA 2000 §201.6(c)(3)(ii)). The HMP includes goals meeting the DMA 2000 (Section **Error! Reference source not found.**), and a comprehensive range of specific mitigation actions (Sections **Error! Reference source not found.** and **Error! Reference source not found.**). The actions identified need to be part of an action plan that describes how the actions will be prioritized (including cost benefit review), implemented, and administered by the community (DMA 2000 §201.6(c)(3)(iv)); (DMA 2000 §201.6(c)(3)(iii)) are found in Section 6.4.

In Section **Error! Reference source not found.** beginning on page **Error! Bookmark not defined.** the HMP describes the process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate (DMA 2000 §201.6(c)(4)(ii)).

A-7.5 Plan Maintenance - Review, Evaluation, and Implementation Requirements

As the community develops and mitigation efforts are implemented, the HMP must be revised to reflect developments within the community (DMA 2000 §201.6(d)(3)). **Error! Reference source not found.**, illustrates the progress made on the previous Mitigation Action Plan. Over time the community's mitigation priorities will change to reflect progress in local mitigation efforts and the HMP must reflect these changes (DMA 2000 §201.6(d)(3)). The HMP revised Mitigation Action Plan is presented in **Error! Reference source not found.**1, beginning on page **Error! Bookmark not defined.**. The change in the community's priorities must be reflected in updates to the HMP (DMA 2000 §201.6(d)(3)). These are listed in **Error! Reference source not found.** beginning on page **Error! Bookmark not defined.**.

It is recommended that the community update their HMP annually, including public involvement. A formal update process, including review and approval of the HMP, is required every 5 years in order for the community to be eligible for certain FEMA program grants.

A-7.6 Plan Adoption Requirements

The State of Alaska and FEMA will review the HMP and subsequent updates to the HMP every 5 years. Following State and FEMA review and approval the community must formally adopt the HMP, documenting how the community's governing body has adopted the HMP (DMA 2000 §201.6(c)(5)). For multi-jurisdictional plans, each jurisdiction that requests approval of the plan,

there must be documentation of each jurisdictions formal adoption of the plan (DMA 2000 §201.6(c)(5)). Once the HMP has been adopted by the community it can then receive final approval by FEMA. Section **Error! Reference source not found.** beginning on page **Error! Bookmark not defined.** describes how the local governing bodies have formally adopted this HMP Update.

This HMP Update includes in the front matter the Mitigation Plan Review Tool that's been provided as a guide for developing this HMP Update and that will be used by the State of Alaska and FEMA for approving this HMP. The Mitigation Plan Review Tool indicates where within the HMP that plan review and adoption requirements have been demonstrated and documented.

A-7.7 Hazard Mitigation Assistance (HMA) Programs

FEMA's Hazard Mitigation Assistance (HMA) Guidance introduces three primary programs that provide funding for eligible mitigation planning and mitigation projects to reduce disaster losses and to protect life and property from future disaster damages. The three HMA programs are the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program. The application cycles for these programs are announced via http://www.grants.gov/.

- HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential major disaster declaration
- PDM provides funds for hazard mitigation planning and projects on an annual basis
- FMA provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP) on an annual basis. FMA facilitates Severe Repetitive Loss (SRL) and Repetitive Flood Claim (RFC) programs

The HMA grant programs provide funding to States, Tribes, and local entities that have a FEMA-approved State, Tribal, or Local Hazard Mitigation Plan. The HMGP and the PDM grants are authorized under the Stafford Act and DMA 2000, while the FMA is authorized under the National Flood Insurance Act. The HMGP is a directly funded competitive disaster grant program. The PDM and FMA programs, also competitive, rely on specific pre-disaster grant funding sources, sharing several common elements. Each of the HMA programs has a percentage of Federal/non-Federal cost-share requirements.

FEMA has issued several policies that facilitate the mitigation of adverse effects from climate change on the built environment, structures and infrastructure. Recognizing that the risk of disaster is increasing because of multiple factors, including the growth of population in and near high-risk areas, aging infrastructure, and climate change, FEMA promotes climate change adaptation as discussed in Section Chapter 0.

A-7.8 Hazard Mitigation Grant Program – HMGP

HMGP is authorized by Section 404 of the Stafford Act, 42 U.S.C. 5170c, and is available, when authorized under a Presidential major disaster declaration requested by the Governor. Federally-recognized tribes may also submit a request for a Presidential major disaster declaration within their impacted areas (http://www.fema.gov/media-library/assets/documents/85146).

The HMGP provides grants to States, Tribes, and local entities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of HMGP funding available to the Applicant is based on the estimated total Federal assistance, subject to the sliding scale formula outlined in Title 44 of the Code of Federal Regulations (CFR) Section 206.432(b) that FEMA provides for disaster recovery under Presidential major disaster declarations.

A-7.9 Pre-disaster Mitigation – PDM

The PDM program provides funds to State, Tribes, and local entities, including universities, for hazard mitigation planning and mitigation project implementation prior to a disaster event. PDM grants are awarded on a nationally competitive basis. Like HMGP funding, a PDM project's potential savings must be more than the cost of implementing the project. In addition, funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The total amount of PDM funding available is appropriated by Congress on an annual basis.

A-7.10 Flood Mitigation Assistance – FMA

The goal of the FMA grant program is to reduce or eliminate flood insurance claims under the NFIP. Particular emphasis for this program is placed on mitigating repetitive (RL) properties. The primary source of funding for this program is the National Flood Insurance Fund. Grant funding is available for three types of grants, including Planning, Project, and Technical Assistance. Project grants, which use the majority of the program's total funding, are awarded to States, Tribes, and local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP.

The SRL and RFC programs under FMA program provides funding to reduce or eliminate the long-term risk of flood damage to residential structures insured under the NFIP, and the RFC program provides funding to reduce or eliminate the long-term flood damage risk to residential and nonresidential structures insured under the NFIP. Up to $10 million is available annually to assist States and communities with reducing flood damages to structures which have had one or more claim payments for flood damages. All RFC grants are eligible for up to 100 percent Federal assistance.

A-7.11 HMA Commitment to Resilience and Climate Change Adaptation

Recognizing that the risk of disaster is increasing as a result of multiple factors, including the growth of population in and near high-risk areas, aging infrastructure, and climate change, FEMA promotes climate change adaptation by acknowledging the challenges posed by climate change, including more intense storms, frequent heavy precipitation, heat waves, drought, extreme flooding, and higher sea levels. These phenomena may have impacts on mitigation, preparedness, response, and recovery operations as well as the resiliency of critical infrastructure and various emergency assets. FEMA encourages recipients and subrecipients to consider

climate change adaptation and resiliency in their planning and scoping efforts (FEMA, FY15 Hazard Mitigation Assistance (HMA) Guidance, 2015).

This HMA recognizes climate change as a contributing factor in considering the magnitude and frequency of several of the hazards profiled. The mitigation strategy developed for the community includes monitoring climate changes as a contributor to erosion, flooding, severe weather events, permafrost degradation/subsidence, wildfire, and drought.

Appendix 8 – Photographic Documentation

IMG_0541.jpg	Date: 3/26/2018	Time: 15:58	Direction: North

Cap ‘N Snow Center.

IMG_0548.jpg	Date: 3/26/2018	Time: 16:38	Direction: West

McGrath Cemetery.

IMG_0560.jpg	Date: 3/28/2018	Time: 10:24	Direction: Southwest

DOT Facility.

IMG_0547.jpg	Date: 328/2018	Time: 11:39	Direction: South

Iditarod School District and McGrath School.

IMG_0549.jpg	Date: 3/28/2018	Time: 10:21	Direction: East

McGrath Native Village Council Community Center.

IMG_0557.jpg	Date: 3/26/2018	Time: 16:49	Direction: Northeast

McGrath Healthcare Facility Southcentral Foundation.

IMG_0551.jpg	Date: 3/26/2018	Time: 16:49	Direction: North

MTNT Bulk Fuel Facility.

IMG_0550.jpg	Date: 3/26/2018	Time: 16:43	Direction: Southwest

National Weather Service McGrath Station and Federal Aviation Administration

IMG_0564.jpg	Date: 3/28/2018	Time: 15:28	Direction: East

KSKO Radio Station.

IMG_0535.jpg	Date: 3/26/2018	Time: 15:47	Direction: West

McGrath Water Treatment Facility and Bulk Fuel Facility.

IMG_0553.jpg	Date: 3/26/2018	Time: 16:50	Direction: South

Hotel McGrath and air terminal.

Appendix 9 – Mitigation Funding and Other Resources

Federal Mitigation Funding

There are several Federal agencies and programs funding mitigation projects in the State of Alaska. Mitigation grants are administered through the DHS&EM as the grantee to local communities functioning as sub-grantees with the State providing the required matching funds for HMGP. More detailed information on Federal Mitigation Funding is provided in Appendix 9. Table 9-1 is an overview of grant programs and their eligible programs.

HMA Eligible Activities

Activities	HMGP	PDM	FMA
1. Mitigation Projects	√	√	√
Property Acquisition and Structure Demolition	√	√	√
Property Acquisition and Structure Relocation	√	√	√
Structure Elevation	√	√	√
Mitigation Reconstruction			
Dry Floodproofing of Historic Residential Structures	√	√	√
Dry Floodproofing of Non-residential Structures	√	√	√
Minor Localized Flood Reduction Projects	√	√	√
Structural Retrofitting of Existing Buildings	√	√	
Non-Structural Retrofitting of Existing Buildings and Facilities	√	√	
Safe Room Construction	√	√	
Infrastructure Retrofit	√	√	
Soil Stabilization	√	√	
Wildfire Mitigation	√	√	
Post-disaster Code Enforcement	√		
5% Initiative Projects	√		
2. Hazard Mitigation Planning	√	√	√
3. Management Costs	√	√	√

FEMA administers Hazard Mitigation Assistance (HMA) grants through Congressional authorization of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 2000 as amended (DMA 2000). While many features of the HMA grants overlap, such as the benefit cost analysis (BCA) requirement, each grant program has specific features. Detailed guidance for these grants is provided by FEMA at http://www.fema.gov/library/viewRecord.do?id=3649.

Federal Resources

The Federal government requires local governments to have a HMP in place to be eligible for mitigation funding opportunities through FEMA such as the HMA Programs described in Section 1.5. The Mitigation Technical Assistance Programs available to local governments are also a valuable resource. FEMA may also provide temporary housing assistance through rental assistance, mobile homes, furniture rental, mortgage assistance, and emergency home repairs. The Disaster Preparedness Improvement Grant also promotes educational opportunities with respect to hazard awareness and mitigation.

FEMA, through its Emergency Management Institute, offers training in many aspects of emergency management, including hazard mitigation. FEMA has also developed a large number of documents that address implementing hazard mitigation at the local level. Several key resources are described below and include internet link to the materials of additional information. Documents can also be ordered directly from FEMA:

E-mail: FEMA-Publications-Warehouse@dhs.govmail
Phone: 1-800-480-2520
Fax: 240-699-0525

- Recommended FEMA Online Training:
  - FEMA IS-393.B: Introduction to Hazard Mitigation
  - FEMA IS-318: Mitigation Planning for Local and Tribal Communities
  - FEMA IS-212.B: Introduction to Unified Hazard Mitigation Assistance (HMA)
  - More specific training, including mitigation training specific to the hazards profiled in this HMP can be found here: FEMA ISP Courses.
- Key FEMA Online Resources and Documents:
  - Hazard Mitigation Grant Program (https://www.fema.gov/hazard-mitigation-grant-program). This site contains information about FEMA's Hazard Mitigation Grant Program (HMGP). The purpose of this site is to connect individuals and state, local, and tribal government representatives with the resources they need to implement hazard mitigation measures in their communities.
  - Hazard Mitigation Planning Frequently Asked Questions (https://www.fema.gov/hazard-mitigation-planning-frequently-asked-questions). This page provides answers to Frequently Asked Questions (FAQs) concerning hazard mitigation planning.
  - FEMA Publications Catalog FEMA P-20 / March 2010 (https://www.fema.gov/media-library-data/20130726-1723-25045-0186/p_20.pdf). This catalog is a work in progress. It's a compilation of all FEMA publication products printed since 2007. As products come to FEMA for printing or reprinting, they're added to this catalog. In essence, this catalog contains the most recent publication products in our inventory
  - Mitigation Best Practices Portfolio (https://www.fema.gov/mitigation-best-practices-portfolio). Learn about Mitigation Best Practices. The stories in this portfolio offer ideas for you to use in reducing or preventing damage from disasters.
  - Disaster Assistance: A Guide to Recovery Programs FEMA-229 / update August 2009 (https://www.fema.gov/media-library/assets/documents/6341). Disaster Assistance: A Guide to Recovery Programs supports the National Response Plan as a resource for Federal, State, local, and non-governmental officials. It contains brief descriptions and contact information for Federal programs that may be able to provide disaster recovery assistance to eligible applicants.

- Unified Federal Environmental and Historic Preservation Review Guide For Federal Disaster Recovery Assistance Applicants

- Emergency Management Guide for Business and Industry (https://www.fema.gov/media-library/assets/documents/3412). This guide provides step-by-step advice to organizations on how to create and maintain a comprehensive emergency management program.

- Department of Agriculture (USDA). Assistance provided includes: Emergency Conservation Program, Non-Insured Assistance, Emergency Watershed Protection, Rural Housing Service, Rural Utilities Service, and Rural Business and Cooperative Service.

- Department of Energy (USDOE), Office of Energy Efficiency and Renewable Energy, Weatherization Assistance Program. This program minimizes the adverse effects of high energy costs on low-income, elderly, and handicapped citizens through client education activities and weatherization services such as an all-around safety check of major energy systems, including heating system modifications and insulation checks.

- Department of Health and Human Services (DHHS), Administration of Children & Families, Administration for Native Americans (ANA). The ANA awards funds through grants to American Indians, Native Americans, Native Alaskans, Native Hawaiians, and Pacific Islanders. These grants are awarded to individual organizations that successfully apply for discretionary funds. ANA publishes in the Federal Register an announcement of funds available, the primary areas of focus, review criteria, and the method of application (http://www.acf.hhs.gov/programs/ana/).

- Department of Housing and Urban Development (HUD), Office of Homes and Communities, Section 108 Loan Guarantee Programs. This program provides loan guarantees as security for Federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing.

- Community Development Block Grant Disaster Recovery Program (HUD/CDBG). Provides grant assistance and technical assistance to aid communities in planning activities that address issues detrimental to the health and safety of local residents, such as housing rehabilitation, public services, community facilities, and infrastructure improvements that would primarily benefit low-and moderate-income persons.

- Department of Labor, Employment and Training Administration, Disaster Unemployment Assistance. Provides unemployment subsistence grants for those who become unemployed because of a major disaster or emergency. Applicants must have exhausted all benefits for which they would normally be eligible.

- Environmental Protection Agency (EPA), Overview of Federal Disaster Funding Opportunities for Water and Wastewater Utilities. This website provides a listing and short descriptions of funding programs from the U.S. Department of Agriculture

(USDA), Federal Emergency Management Agency (FEMA), U.S. Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD) and U.S. Small Business Administration (SBA)

- Federal Financial Institutions. Member banks of Federal Deposit Insurance Corporation, Financial Reporting Standards or Federal Home Loan Bank Board may be permitted to waive early withdrawal penalties for Certificates of Deposit and Individual Retirement Accounts.

- Internal Revenue Service (IRS), Tax Relief. Provides extensions to current year's tax return, allows deductions for disaster losses, and allows amendment of previous tax returns to reflect loss back to three years.

- USACE. The USACE Alaska District's Civil Works Branch studies potential water resource projects in Alaska. These studies analyze and solve water resource issues of concern to the local communities. These issues may involve navigational improvements, flood control or ecosystem restoration. The agency also tracks flood hazard data for over 300 Alaskan communities on floodplains or the sea coast. These data help local communities assess the risk of floods to their communities and prepare for potential future floods. The USACE is a member and co-chair of the Alaska Climate Change Sub-Cabinet.

- U.S. Small Business Administration (SBA). May provide low-interest disaster loans to individuals and businesses that have suffered a loss due to a disaster. Requests for SBA loan assistance should be submitted to DHS&EM.

State Resources

- DHS&EM is responsible for improving hazard mitigation technical assistance for local governments for the State of Alaska. Providing hazard mitigation training, current hazard information and communication facilitation with other agencies will enhance local hazard mitigation efforts. DHS&EM administers FEMA mitigation grants to mitigate future disaster damages such as those that may affect infrastructure including the elevation, relocation, or acquisition of hazard-prone properties. DHS&EM also provides mitigation funding resources for mitigation planning on their web site at http://www.ak-prepared.com/plans/mitigation/mitigati.htm.

- Division of Senior Services: Provides special outreach services for seniors, including food, shelter and clothing.

- Division of Insurance: Provides assistance in obtaining copies of policies and provides information regarding filing claims.

- Department of Military and Veteran's Affairs (DMVA): Provides damage appraisals and settlements for VA-insured homes, and assists with filing of survivor benefits.

- The Community Health and Emergency Medical Services (CHEMS) is a section within Division of Public Health within the Department of Health and Social Services (DHSS). DHSS is charged with promoting and protecting the public health and one of CHEMS' responsibilities is developing, implementing, and maintaining a statewide comprehensive emergency medical services system. The department's statutory mandate (Alaska Statute 18.08.010) requires it to:

(1) Coordinate public and private agencies engaged in the planning and delivery of emergency medical services, including trauma care, to plan an emergency medical services system.

(2) Assist public and private agencies to deliver emergency medical services, including trauma care, through the award of grants in aid.

(3) Conduct, encourage, and approve programs of education and training designed to upgrade the knowledge and skills of health personnel involved in emergency medical services, including trauma care.

(4) Establish and maintain a process under which hospitals and clinics can represent themselves to be trauma centers because they voluntarily meet criteria adopted by the department which are based on an applicable national evaluation system.

- Department of Commerce, Community and Economic Development/Division of Community and Regional Affairs (DCCED/DCRA). DCRA administers the HUD/CDBG, FMA Program, and the Climate Change Sub-Cabinet's Interagency Working Group's program funds and administers various flood and erosion mitigation projects, including the elevation, relocation, or acquisition of flood-prone homes and businesses, throughout the State. This department also administers programs for State "distressed" and "targeted" communities.

- Division of Environmental Conservation (DEC). DEC's primary roles and responsibilities concerning hazards mitigation are ensuring safe food and safe water, and pollution prevention and pollution response. DEC ensures water treatment plants, landfills, and bulk fuel storage tank farms are safely constructed and operated in communities. Agency and facility response plans include hazards identification and pollution prevention and response strategies.

- Department of Transportation and Public Facilities (DOT/PF). DOT/PF personnel provide technical assistance to the various emergency management programs, to include mitigation. This assistance is addressed in the DHS&EM-DOT/PF Memorandum of Agreement and includes, but is not limited to: environmental reviews; archaeological surveys; and historic preservation reviews.

    - In addition, DOT/PF and DHS&EM coordinate buy-out projects to ensure that there are no potential right-of-way conflicts with future use of land for bridge and highway projects, and collaborate on earthquake mitigation.

    - Additionally, DOT/PF provides safe, efficient, economical, and effective operation of the State's highways, harbors, and airports. DOT/PF uses it's Planning, Design and Engineering, Maintenance and Operations, and Intelligent Transportation Systems resources to identify the hazard, plan and initiate mitigation activities to meet the transportation needs of Alaskans and make Alaska a better place to live and work. DOT/PF budgets for the temporary replacement bridges and materials necessary to make the multi-model transportation system operational following a natural disaster.

- DNR administers various projects designed to reduce stream bank erosion, reduce localized flooding, improve drainage, and improve discharge water quality through the stormwater grant program funds. Within DNR, the Division of Geological and

Geophysical Survey (DGGS) is responsible for the use and development of Alaska's mineral, land, and water resources, and collaboration on earthquake mitigation.

- The DNR's Division of Forestry (DOF). DOF participates in a statewide wildfire control program in cooperation with the forest industry, rural fire departments and other agencies. Prescribed burning may increase the risks of fire hazards; however, prescribed burning reduces the availability of fire fuels and therefore the potential for future, more serious fires.

- DOF also manages various wildland fire programs, activities, and grant programs such as the FireWise Program, the Community Forestry Program and the Volunteer Fire Assistance and Rural Fire Assistance Grant programs. Information can be found at http://forestry.alaska.gov/fire/current.htm.

Other Funding Sources and Resources

The following provide focused access to valuable planning resources for communities interested in sustainable development activities.

- FEMA, http://www.fema.gov - includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures.

- American Planning Association (APA), http://www.planning.org - a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.

- Institute for Business and Home Safety (IBHS), http://ibhs.org - an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters.

- American Red Cross (ARC). Provides for the critical needs of individuals such as food, clothing, shelter, and supplemental medical needs. Provides recovery needs such as furniture, home repair, home purchasing, essential tools, and some bill payment may be provided.

- Crisis Counseling Program. Provides grants to State and Borough Mental Health Departments, which in turn provide training for screening, diagnosing, and counseling techniques. Also provides funds for counseling, outreach, and consultation for those affected by disaster.

EROSION

Mitigation Action	Status
Relocation of infrastructure	Carried forward to 2017 plan - Fall 2018, moving one home under consideration.
Prioritize infrastructure	Ongoing - Two phases of erosion control revetment installed; planning 3rd phase underway in fall 2018; annually inspected by City.
Create City fund for erosion	Completed - Fund was created in the City's FY 18 Operating Budget
ID sources for erosion funding	Ongoing - Resource guide: Understanding and Evaluating Erosion Problems; communication with NRCS and AK Homeland Security
Create local erosion task force	No action taken
Prohibit new construction in erosion zones	No action taken
Detailed mapping of erosion zones	Completed - NRCS mapped the riverbank in the assessment phase of the Emergency Watershed Protection project
Public education	Ongoing - Continuing to develop program

FLOODING

Mitigation Action	Status
Relocation of structures	Ongoing - Fall 2018, moving one home under consideration
Elevate structures	Carried forward to 2017 plan as HIGH priority.
Flood control measures	Carried forward to 2017 plan as HIGH priority.
Structural reinforcement	Completed. Spillway installed; riverbank revetment installed
Allow new construction only within NFIP criteria	Carried forward to 2017 plan HIGH priority as "Promote continued compliance with NFIP"
Map flood zones and designate hazard zones	Carried forward to 2017 plan HIGH priority as "Participate in RiskMap Program"

Wildfire

Mitigation Action	Status
Promote use of FireWise practices and concepts throughout community	Ongoing - Education through the AK Division of Forestry in the school and at 4th of July community events.
Create Community Wildfire Protection Plan (WPP)	Complete - Created in 2010
Create defensible space around city infrastructure	Ongoing - Brush is cleared annually around City structures.
Wildfire evacuation plan	Completed - Discussed and included in the 2018 Emergency Operations Plan.
Require defensible space around structures	No action taken
Create firebreak around city	Ongoing - AK Division of Forestry have cleared fire breaks protecting McGrath; MTNT received a grant to continue clearing in 2019.
Public education	Ongoing - Education through the AK Division of Forestry in the school and at 4th of July community events.